THE OIL WEEKLY

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FEB. 15–18	American Institute of Mining and Metallurgical Engineers, New York.
APR. 8– 9	American Petroleum Institute, Division of Production, Eastern District, Wm. Penn Hotel, Pittsburgh.
7– 9	American Association of Petroleum Geologists, Texas Hotel, Fort Worth, Texas.
MAY 5– 6	Petroleum Electrical Association, Houston.

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LIBERTY

versus

Compulsion

We are engaged in the greatest war in history—to determine whether our nation and other nations founded on liberty and the dignity of the individual shall endure.

The struggle is between two totally opposite ideologies. One is based on brute force, the top gang keeping its power by compulsion. The other is based on logic and persuasion, the leaders obtaining office by vote and remaining there only by the consent of the governed. Under regimentation creative research congeals and the masses produce and fight as sullen slaves. Under democracy creative research is stimulated and mass production multiplies. Soldiers go to battle with unbeatable spirit because of the determination of free men to maintain that priceless gift which they have won after ages of fighting and which they will never give up . . . the gift of liberty.

When the war is won and we return to peace time pursuits there will still be a big job to do in rehabilitating a broken world. People everywhere will look to America. Our business men and leaders will have a great responsibility and a great opportunity. In keeping with this thought the Mission Manufacturing Company is planning many advancements and improvements in its products for the benefit of oil men who will be busy to a degree never before experienced. In the meantime war comes first.

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and to insure a strong and stable United States when the war is over.

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The Changing Panorama

Industry Faces Year With Many Problems

EVEN the most faithful believers in the ingenuity and resourcefulness of the American petroleum industry must have some misgivings over the responsibility confronting the industry for 1943, under the serious handicaps of equipment and manpower shortages.

The industry will be called upon to satisfy a greater demand for oil than it ever has filled before. In doing this, it will have to produce from the oil fields of the United States more crude oil than it ever has produced in a year heretofore. It will be expected to process in refineries more crude oil than it ever charged to stills annually in the past. It will have to do most of this in hand-to-mouth manner—producing and refining currently practically all the oils needed, and having to draw on United States wells for substantial volumes of crude and heavy fuel oils that formerly were supplied by Venezuelan fields and West Indies refineries. All the while, there will be scarcely any comfort or aid of crude- or refined-oil reserves in storage above ground. There were limited stocks, to help supply demand, in 1942; but they had to be largely used up. This year, the stocks are scarcely above bare working requirements, and if it were at all possible, they should be increased rather than further reduced.

Finally, as a consideration that seriously dims the light of hope for the fulfillment of the heavy responsibilities, the industry is asked to do all these record - breaking and unprecedented feats while allowed to drill only a substantially subnormal number of wells—for the second year in succession.

As compared with the 32,210 wells completed in 1941, the industry drilled only 21,412, or one third less, in 1942; and for 1943, only about 18,500 well completions are indicated.

Even under the 1942 drilling volume, wildcatting was subnormal and oil-reserve discoveries were down materially, the volume of new oil found having been the lowest in many years. For the first time in nearly a decade, the reserves added failed to equal the amount produced during the year. Despite some decrease in crude production in 1942, the new supply established by prospecting failed to compensate for the year's withdrawals from older fields by 260,000,000 barrels. Under the definition of a major field as one representing 20,000,000 barrels of ultimate production, the nation dipped into its reserves in 1942 and lowered them to the extent of a dozen major fields. Merely to have retained the status quo on reserves during 1942 would have required discovery of the dozen major fields which actually were not found.

Role of Natural Gas Looms Larger

THE growing importance of natural gas, particularly in Texas where production is the greatest, to the war program is amply demonstrated in a Bureau of Mines report showing a sharp gain in consumption.

It goes without saying that natural gas, tunneled through thousands of miles of pipe lines into other states, is filling a vital role in war plants. The fuel is being piped to defense factories as far away as Minnesota and Michigan.

Production figures for 1942 have not been compiled by the Bureau, but Texas fields exported 257,291,000,000 cubic feet in 1941, the average cost at the wells being 2 cents per thousand and 14.9 cents at points of consumption. This figure will be revised upward when data are compiled upon current movements.

With many wildcats opening new and large gas reserves, the state is able to supply even more areas throughout the nation—for the duration and after the duration.

Editorial Index to 1942 Issues Available Upon Request

Due to the paper shortage, THE OIL WEEKLY is deviating from its long-standing previous custom of incorporating its Annual Editorial Index in one of its regular issues mailed to all subscribers. The complete editorial index covering all issues of THE OIL WEEKLY published during 1942, bound separately in convenient pamphlet form, will be sent without charge to each subscriber requesting a copy.

Address requests to Circulation Department, Box 2608, Houston, Texas.

More Power Than 25 Freight Locomotives

POWER demands for the pump stations on the 24-inch line from Longview to the Eastern Seaboard, when completely equipped for maximum throughput, will be less than half the horsepower required to drive the tankers required to insure like receipts at the delivery points. Further illustrating the power requirements of the line, H. E. Dralle, manager of Westinghouse Petroleum Engineering Section, pointed out that the 80-odd motors driving the pumps on the line totalled more horsepower than 25 of the big freight locomotives now engaged in snaking trains of tank cars eastward to fill the petroleum needs of the seaboard area.

The equivalent horsepower, driving half the tankers required for the daily delivery of the big line, in locomotives would deliver only one sixth the amount by train, assuming that it would be possible to employ each type of horsepower 24 hours per day over 7-day weeks. Thus, on a power-consumption basis, the line will be twice as effective as the tank ships, and six times as efficient as steam or diesel locomotives. And when it comes to maintenance . . .

War Plants Depend On Private Autos

THE vast majority of war workers live beyond walking distance to work and of necessity must depend on private cars for transportation, the Public Roads Administration of the Federal Works Agency reports on the basis of studies of 140,000 workers at 94 war plants in 10 states. Most of the larger plants would be forced to close down if they had to depend entirely on workers who could walk to work or could travel by public conveyances, it was said. Eighty percent of the workers were found to live to 2 to 10 miles or more from their place of employment.

The survey was made in Alabama, Colorado, Illinois, Indiana, Kansas, Ohio, Oregon, Utah, Virginia and West Virginia. They show that 73 percent of the 140,000 workers go to and from

work by private automobile. Only 15 percent reported using busses and street cars. Ten percent said they walked, while two percent used bicycles or other means.

Nearly three fourths of the tires on automobiles owned by the workers were estimated by the workers to be about half worn out in the fall of 1942.

At only 12 of the plants was there an indication that more than 25 percent of the workers use mass transportation facilities, and all but 2 of these plants are situated in or adjacent to metropolitan areas of 100,000 or more.

More Aid Sought For Bureau Work

A HIGH compliment to the U. S. Bureau of Mines is paid in an editorial in the current issue of The Independent Monthly, official organ of the Independent Petroleum Association of America, which urges that Congress increase its appropriation to the Bureau of Mines for the purpose of expanding the work which the Bureau has done in promoting secondary recovery.

Says the editorial in part:

"Here is a Bureau that has the 'know how.' Its engineers have worked in the oil industry for many years. The oil producers know them and respect them. They are painstaking, practical-minded; they know what can and what cannot be done. The Bureau has always spent money carefully. But it does need some money. The engineers must get around and see what is going on in the oil fields. The Bureau must be able to operate its laboratories. Its work is not done by theorizing in an office. Any operating procedure that originates in the Bureau is tested by practical conditions before a recommendation is made. It is close to those conditions; its petroleum engineers are stationed in the oil country."

Need for greater assistance in the way of general technical advise to operators who cannot afford to employ engineering staffs or consulting engineers is given as the basis of the suggestion.

Women Workers Hold 9-1 Majority In Butadiene Technical School

Sixty-three women and seven men are attending a class in elementary chemistry and plant operation at the University of Pittsburgh preparatory to working in a butadiene and styrene plant being constructed nearby.

Some of the students have attended college, and several have Bachelor of Science degrees. First class began November 11, meets three hours, two evenings a week and will last for almost four months. Those passing the course with acceptable grades are guaranteed jobs. Photograph shows Dr. James P. Coull, professor of chemical engineering at the university, instructing some of the girls how to work a temperature and humidity controlled tray dryer.

Several hundred men and women (housewives, school teachers, bookkeepers, sales girls, women whose husbands are at war, etc.) who have a high school diploma are being recruited for the lecture courses in chemistry and laboratory work given by Pitt professors and Dr. William F. O'Connor, director of operator employe training for Kopper's Butadiene Division.

From Washington and the forks of the creek come reports telling us we may have a food and feed shortage. The pinch of it already is felt by some. At the same time pressure continues in Washington to disrupt the present program of synthetic-rubber-plant construction with oil as raw material and build plants to operate on alcohol. There is not a shortage of the raw materials from which to make synthetic rubber ingredients from petroleum — the shortage is in steel for the plants. If we are faced with food and feed shortage, why all the shouting about rubber from alcohol?

Road to Help Far North Oil

COMPLETION of the road from the United States to Alaska will not only open up a new point of use of petroleum when the war is over, but before that time it probably will have had a part in the opening of new petroleum reserves in the Far North. Fort Norman, on the Arctic Circle, has had production for many years, but its distance from places of consumption has restricted development. Shortly 12 rigs will be running there and the oil will move to market, thanks in part to the road. Search for petroleum in Alaska has been underway for some time under conditions as difficult as a campaign in winter Russia. Geologists, braving hardships which make the jungle seem tame, have been hard at work and the fruits of their investigation may be seen before the war ends.

Proper Care Can Double Service Life of Rubber Hose

By ELTON STERRETT, Staff Writer

OF ALL the oil-industry equipment involving rubber in its construction, rubber hose is least likely to be rendered unserviceable solely through the loads placed on it by the service for which it is designed. Experts estimate that not one hose in ten actually wears out through carrying fluids, including gases and steam. External heat, light, acids and gases, abuse and unnecessary abrasion shorten the life of most units, and the greatest factor in hose deterioration is abuse.

The amount of rubber in a rubber-lined cotton fire hose is relatively slight, while the percentage of the same material in a rotary hose may be high, but in either instance failure of the sealing material—the rubber—renders the hose unfit for further service.

With new hose high on the list of hard-to-get materials, oil companies are safeguarding their hose as never before, and are on the alert for new means of still further prolonging the life of hose they now have.

It is in the handling of small units such as water hose, air hose, and gas hose for oxy-acetylene torches, that taking a little more care in handling the hose will greatly increase its useful life. No hose, bent sharply back on itself in what would form a kink in a wire line, is as strong at the point of the bend as it was originally. Kinking of hoses to provide temporary shut-off of flow greatly overstresses the fibers at the bend, and encourages separation of rubber from fabric plies. The habit of carrying a coil of hose to the point of use, and then dragging an end to the point of attaching throws a turn into the hose for each turn of the original coil, and unless the free end is twisted or rotated in the right cycle through 360 degrees for each loop thus pulled free, will result in the formation of a dog-leg or kink which tends to catch on projections, and which may break if left in the hose when pressure is applied. If the coil cannot be unrolled as it is stretched between connection and point of use, it should be carefully rotated as it is laid, and the relative lay of the fibers in the structure preserved.

The dragging over the ground of a hose which has been simply pulled from a coil places most of the abrasive wear of such action on the humps or nodes formed by the kinks, concentrating wear on relatively small areas of the case, and encouraging the formation of a second kind at the same spot the next time the hose is stretched. Such repeated kinking, like overbending of a metal, eventually results in breakage of even the highly flexible rubber lining, and separation of the plies of the fabric reinforcing.

Although built to withstand certain operating pressures, life of the hose is shortened if such pressures be carried constantly. The use of the nozzle for permanent shut-off is sure to shorten hose life, as is the maintaining of the hose full of liquid when no flow is desired. Whenever possible, the hydrant or valve in the permanent portion of the flow line—the pipe—should be closed for any but temporary stoppage of flow through the hose, and if the shut-down is to be of more than a day's duration, the hose should be disconnected and drained. If the fixed end is to be left attached, the other end of the hose should be so placed that a gradual slope is maintained over the entire length which will allow the unit to drain.

Attaching the Hose

Unless the hose comes equipped with proper couplings, a little extra care at the time of fitting these units will prevent premature failure of the hose im-

TO PROLONG HOSE LIFE

Handle with care. Avoid kinking when uncoiling. Let hose untwist when pulling from coil.

Avoid stretching hose. When filled to working pressure it tends to shorten. Fastening both ends rigidly when fully extended imposes severe strains on fabric.

Do not walk on hose, nor roll heavy objects over even a wire-reinforced hose. And, if once deformed, do not attempt to hammer a flattened hose back to round again. If pressure does not help reshape the deformed section, cut out damaged length and splice with rigid coupling.

Avoid sharp bends and kinks. Hose is designed to carry equal stresses all around its circumference. In a kink the outside is overloaded, the crimp carries no pressure.

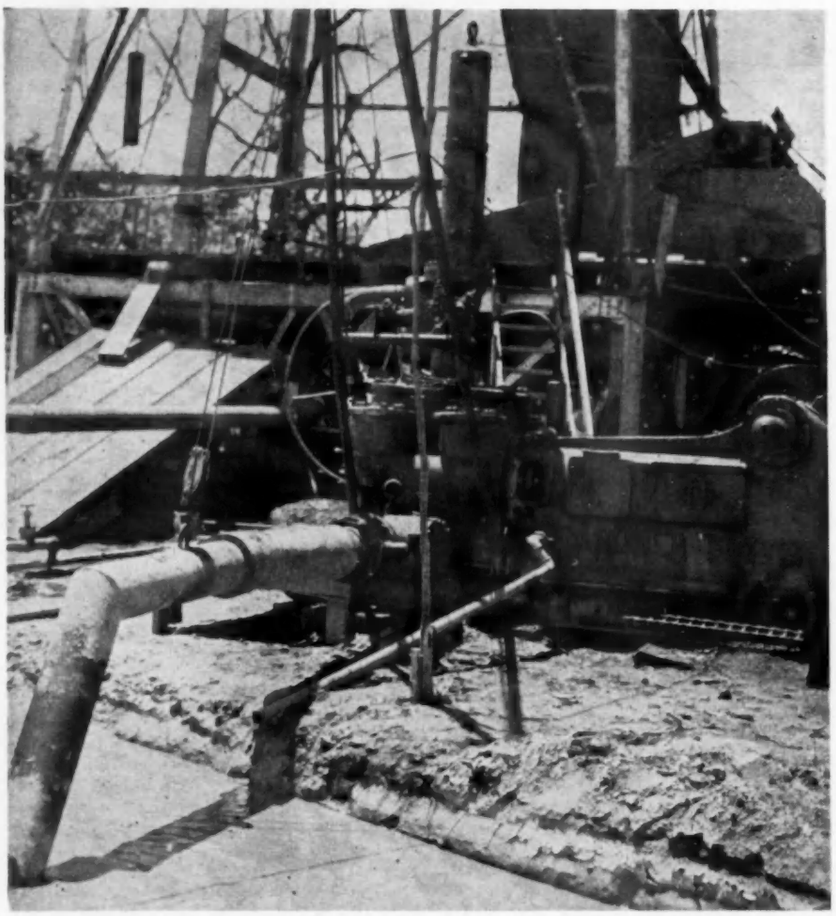
Hose is built with a factor of safety of four. Operating under a lower factor decreases hose life, due to excessive fatigue.

Do not expect a hose to span wide gaps and carry load. A plank spanning the gap will support the hose and prevent overstressing.

Be sure hose is used in service for which it was built. Suction hose is not built to withstand interior pressure, nor pressure hose to resist collapse. Nor should steam be carried in water hose.

Hose not in use should be carefully drained, then coiled and stored flat in cool, dark place away from sunlight, oils, acid and fumes.

ANOTHER EQUIPMENT-MAINTENANCE FEATURE



This short section of suction hose, suspended clear of the ground or other support, is in no danger of chafing or abrasion during the drilling of the well. The suction-leveling device is so positioned that the hose is not called upon to sustin weight or maintain alignment of free end of suction set-up. Many operators now cover such exposed sections of mud suction hose to prevent premature failure of the surface rubber coat.

mediately adjacent to the fitting. After checking to insure the proper size fitting for the diameter of the hose, each fitting should be checked to remove burrs, sharp edges or projections which would tend to cut the hose lining. A hose should not be reamed out to force it over an oversize fitting, nor should the end of the hose be held in a vise or clamp and the fitting hammered into it. If the hose cannot be lubricated with rubber cement, and will not slip over a fitting when wetted, use of a little soap may help, but under no circumstances should the fitting or hose end be oiled. Oil thus trapped between fitting and lining of the hose softens the rubber, causing it to swell with a resultant pressure which greatly exceeds working pressures for the hose. The softened rubber flows, comes loose from the fabric carcass, and loses its strength, eventually being forced out from the clamp and permitting a leak at the fitting.

Use of a wire around the outside of the hose in place of the usual hose clamp also sets up localized overloading in the hose fibers, resulting eventually in a peripheral crack or failure which requires refitting the end, and may cause longitudinal splitting of the hose through stresses accumulating at the point of weakness. If no hose clamp is available, seizing the end of the hose with strong twine, as on a rope end, is better than the single wire twist, it being advisable to shellac the winding after completion to prevent damage through wetting.

Floor Hose

The service hose on the derrick is frequently called on to handle steam or water around 212° F. one minute and cold water the next, and is thus subjected to alternating extremes of temperature which have a shortening effect on the life of the rubber in the hose, tending to harden or age it prematurely. The simple precaution of making the change gradually, instead of cutting off the steam and immediately turning on the cold water, gives the metal reinforcing coils time enough to contract slowly, and thus permit the entire hose structure to adjust itself as a unit. This allowance of time for expansion or contraction adjustment is especially important if heavy metal fittings are used at the hose ends.

Provision of more than the customary peg bolt or projecting pipe nipple for hanging up the service hose prevents the formation of overstressed areas in the short bends formed when even a wire-wrapped hose is suspended from a single support. A simple hose bracket used by some rigs is formed with a five-gallon steel paint bucket, nailed up to a strut or heavy timber at the proper height. The bucket is then reinforced by having the original steel cover forced into place and tacked there, giving the relatively thin walls of the bucket ample strength to support the hose. Another type of fixed support consists of a half spool made up from curved two-inch end timbers with a slat surface of one-inch material, the unit being clamped to a derrick leg with one or more U-bolts. The simple changing of the outlet direction from the service pipe from either vertical or horizontal to a 45-degree downward slope saves much of the end cramping imposed on the hose with either of the usual mountings.

Increased care should be shown the service hose with regard to keeping it clear of oils, greases and fats. These materials tend to soften and dissolve rubber at normal temperatures, but when the same hose is heated to around 140° F. by passage of steam or hot water through it, the combination of oils and fats with the rubber is greatly accelerated and breakdown thus speeded. Keeping the derrick floor clear of oils and greases not only pays dividends in improved operating conditions, but also helps prolong hose life by removing damaging substances from its working area. If the hose becomes oil-soaked or grease-covered, it should be cleaned as quickly as possible. Use of gasoline is better than leaving the hose oil-covered, but unless the hose is specially compounded to withstand gasoline and light petroleum oils, the cleaning is little better than the original fouled condition. Washing the hose with any of the trisodiumphosphate cleaners is much more effective, care being taken to clean away as much of the oil as possible from the spiral wire armoring.

Rotary Hose

Proper socketing, protection from chafing at either top or bottom position of the swivel, and elimination of peak stresses will add much to the life of the normal rotary hose. Unless the hose comes equipped with couplings, fitting of these necessary parts should be done by an experienced workman. Maximum stress is borne by the hose structure at the point where it ceases to be an ex-

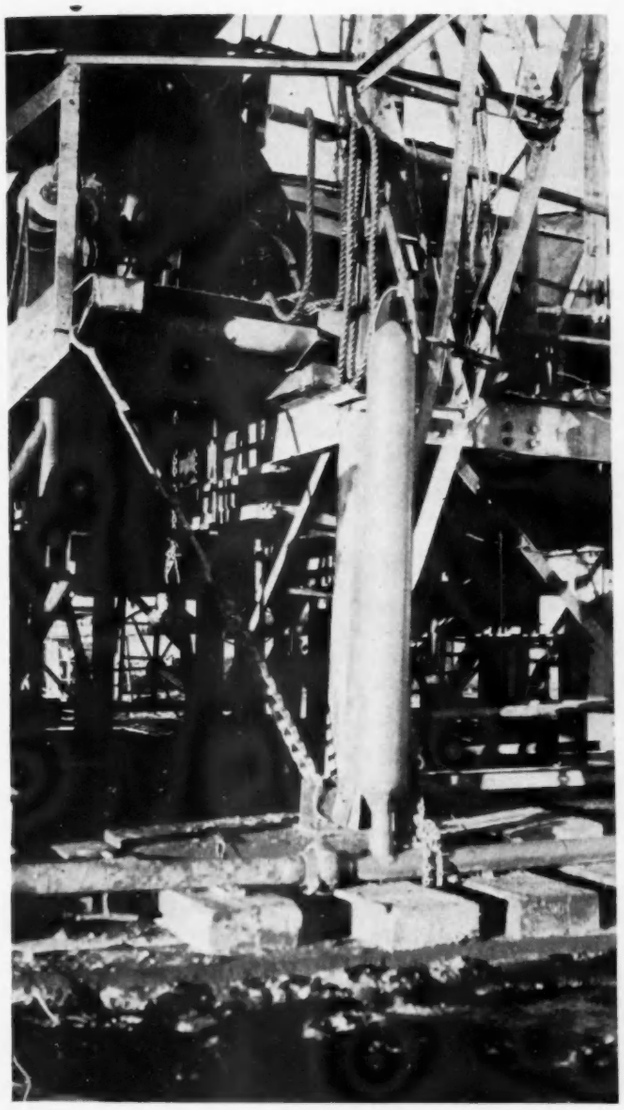
pansible unit and is restrained by the coupling clamps. Any weakening of the structure at this point shortens hose life and provides a node at which peak stresses accumulate.

Proper protection against chafing against the derrick and drag over the floor when the swivel is nearly down can be provided by proper location and height of the standpipe, together with, if necessary, the affixing of pads or buffers on projecting points lying within probable swing of the hose loop during drilling. If the hose contact the floor or swing over the open end of the rathole, raising the standpipe by as little as a 12x12-inch timber frequently will take up enough of the slack to clear the obstruction. Care should be observed, however, in making such an adjustment that a sharp bend is not forced into the hose at the gooseneck when the kelly is down This distance should also be carefully checked before lowering the kelly into the rathole for the first time after increasing elevation of standpipe top above the derrick floor.

In the usual mud system, the flow being pressured by but one pump of the usual duplex type, the stream of mud is not under uniform pressure, but is delivered at intermittent peak pressures causing a localized fluctuation of more than a hundred pounds. This impulse or pressure wave must travel through the rigid pipe system, and is relieved and the pulsations absorbed only by the rotary hose, if the pumping system be unprovided with air chamber for equalizing pressures. This pulsation or pressure wave tends to force the pliable material of the hose against and through the wire reinforcing, imposing much more severe service on the hose than does the actual sustaining of mud-line pressure.

To insure suppression of the pump pulsations, many contractors are installing shock-absorbing chambers in their mud line, preferable at some point close to the standpipe itself, so as to clear the derrick floor of accessories, and taking steps to insure the maintenance of sufficient air volume within the pipe to insure adequate cushioning.

If the line be filled with air at atmospheric pressure, and the mud system be operating under 1500-pound pressures, the final volume of the air is but one tenth the initial, with the air tending to be absorbed at the air-fluid contact area. Use of dual air chambers, tied in to the standpipe feeder with a three-way valve so either may be cut into the system as desired, permits the recharging of the unused cylinder simply by opening a drain in the base and permitting the trapped mud column to be replaced by air, after which the unit may



A pneumatic shock absorber welded to and forming part of the mud line. Such a design permits the top of the device to be braced or guyed to relieve line weld of vibration stresses, but lacks drain or method of renewing air charge during pumping cycle.

Where a hose has been damaged, use of a pipe repair clamp, preferably clamped over a cushion of inner-tube or gasket rubber, will reinforce the spot and prevent further damage there. Care must be taken using a hose so repaired to avoid sharp turns.

again be put on the line. Such chambers, being open to the mud stream, and acting to trap a portion of the mud stream and hold it with little or no through flow, tend to become coated or clogged with particles which settle out of the mud and build up heavy coatings within the cylinders. Provision for washing out the cylinders, if used on a long drilling job, will insure full air volume for the cushioning effect, and thus help protect the hose from pulsation hammer when the system, being equipped with shock-absorbing cylinders, may be supposed to include adequate and permanent safeguard.

If the cylinders be open at the top, seal or closure being provided by either bull plug or screwed plug, and these units are removed for periodical washing down of the cylinders, it frequently happens that there is sufficient leakage to permit the highly compressed air to leak out gradually, yet for the mud stream to seal off further leakage once the air column has been replaced with mud.

Check for this condition consists in cutting off the column from the mud line and cracking the drain valve. If the cylinder be filled completely with mud, there will be only a slow dribble after the first release of pressure on the mud, while if there remain a highly-compressed air zone at the top, flow will continue to spew from the opening and indicate proper air seal at the top.

Suction Hose

The suction hose at the mud pump, originally frequently extending from suction manifold to the foot valve in the pit, now is shortened, due to hose scarcity, to a four- or six-foot section serving to join a steel pit member to the nipple on the pump intake. Proper balancing of the outboard metal section of the intake will relieve the hose of any load-carrying stresses, leaving it to function solely as a flexible joint in the suction set-up. Some contractors, to relieve the hose of any save shock-absorbing deflections, install a swing joint in the outboard section of the pipe, with means for adjusting the swing to give the desired inclination and submergence to the foot valve.

Fire Hose

Infrequently used, often seen only during the annual inspection required by the company's fire insurance policy, fire hose is most apt of all hoses to suffer from neglect and to rot out or split under no pressure. The rubber-lined canvas hose, left on the reel or even more severely abused by being flaked down in a rack, breaks at any abrupt change in direction, and the rubber lining hardens and loses its ability to yield and seal the tube under working pressures. Many companies now stretch and test hydraulically their fire hoses at monthly intervals, draining the hose carefully after each use, and returning to the racks with bends carefully relocated to avoid previous cramped spots. Where the practice of doubling the hose at the center and winding this fold first on the reel is followed, a larger core is now being used, with a semicircular recess into which the fold may be inserted, with a filler of wood or even of rags and waste placed within the bend to hold it out to fill the recess. This method of winding the hose, while giving quick feed off in case of fire, leaves the unit exposed to damage if the hydrant leak even a few drops. Water is thus forced through the hose, travelling along the two restricted passages formed when the tube is flattened, and thus subjecting narrow strips of the hose material to continuous wetting. Also, in cold climates, this trapped water may freeze, splitting the hose or damaging the lining to the point where it will no longer hold required pressures. This condition is easily checked, as the short straight section of hose between hydrant and coil or rack will fill with water and become round, the water within easily being detected by squeezing the hose at that point. Unless the hydrant is known to be tight, provision of a short horizontal nipple between hydrant and hose fitting, with a ⅛-inch petcock set into the bottom of the nipple, permits continuous drainage of the hose line. The petcock may be left open all the time, the amount of water wasted through it in emergency use of the hose being negligible.

Where a hose is flaked down, turning it over before replacing after each test puts the bends in at 180 degrees to their former position, and thus avoids constant cramping of certain and like stretching of other fibers in the same direction throughout the life of the hose.

Steam Hose

Avoid subjecting steam hose to prolonged periods under full pressure unless service demands call for flow of steam at all times. Rubber hose is normally vulcanized under a temperature of from 250 to 275° F. As the table shows, all pressures of saturated steam above 30 pounds psi subject the hose to temperatures above that of the cure, and thus tend to shorten the life of the unit by overcuring the rubber to the point where it eventually hardens, loses its resiliency, and breaks under localized pressure concentrations.

Saturated Steam Temperatures and Pressures (Pounds)

Press.	°F.	Press.	°F.	Press.	°F.
10	240	60	307	100	338
20	260	65	312	125	353
30	275	70	315	150	366
40	288	75	320	200	388
50	298	80	325	225	398
55	303	90	330	250	406

Steam hose, due to its reinforcing, should never be bent sharply, some companies using light steel or asbestos-lined forms to give proper curvature at points where the line makes a 90-degree turn, as at outlets or where attached to throttle castings.

Of even more importance with hoses carrying steam than those carrying cold water or other low-temperature fluids, care must be exercised to prevent oil or grease from contacting the rubber. Under the high temperature failure through is greatly accelerated. A hose carrying steam is also much more liable to change from acid, fumes and alkalies than a similar cold unit carrying the same pressures.

Transportation

Service hoses, formerly thrown into the gang truck with sharp edged tools, odd lengths of pipe and other abrasive and cutting materials, now are carried on racks or reels mounted outside the truck body in many company operations. Such a rack gives quick access to the hose and, if fitted with a crank, permits the hose to be wound on uniformly. If the rack be carried in sockets or clamped to the truck body, the entire unit may be released and carried to the point of use, saving the hose the severe wear of being dragged, sometimes over extremely rough terrain, from truck to job.

Hose stocks in company warehouses, if any, are being protected against premature ageing and decay through frequent inspections, proper storage—flat coils, and with nothing piled atop them—and the realization that these stocks, once depleted, cannot be refilled until raw rubber, or synthetic, supplies are much more abundant than at present.

Rotary hoses, whenever possible, are kept in the original shipping crates until needed, and are kept carefully wrapped or covered with sacking, tarpaulins or heavy brown paper to prevent sunlight from reaching the rubber and ageing it. If the ends of the hose are not capped when received at the warehouse, many companies provide seals or fix plugs in the ends of the hose to prevent abuse of the hose as nesting place for rodents and vermin. A number of premature failures of rotary hose have been traced to disintegration of the rubber in spots which, even after long service, still show strong traces of urea under laboratory analysis to locate possible cause of failure.

Proper care, regard for its relatively easily abraded covering, and relief of the hose from service pressures at all times when such a course is possible, all will pay dividends in prolonged hose life, thus assuring extended continuity to those operations upon which depend the continuance of the flow of oil to war and national needs.

Economics of Water Flooding

Spectacular results have been obtained in recovery in many instances, but the growing costs of labor and scarcity of materials is hindering growth of this method of adding to the supply of oil just when this added supply is needed most, but price margins are too close for expansion

By H. S. MILAM

SPECTACULAR results achieved in water flooding old oil properties in Northeastern Oklahoma and Southeastern Kansas have resulted in increased use of the method until currently approximately 40 percent of the daily oil production of the territory is from properties under flood. In view of the indicated possibilities of further enlarging production by means of water flooding, especially in view of the current alarm over the nation's producing capacity, it may seem surprising that at present the rate of development is beginning to decrease. This is not due to disappointing results, although there have been some disappointments, but is caused by water-flood economics. Water flooding has been conducted under narrow margins of profit, but now that wages and other operating expenses are increasing while the crude must be sold under a frozen price ceiling, there just is not sufficient margin remaining to provide an attractive financial inducement. Operators have a choice of either reducing development costs or the hopes of a higher crude-oil price, and until one or the other is achieved are not likely to expand their water operations materially. Consequently, the nation's producing ability is not being benefitted to the full extent that the region's possibilities offer.

Results Obtained

The extent to which water flooding is being used, can best be shown by the results obtained from water-flood projects.

In Northeastern Oklahoma and Southeastern Kansas at the beginning of last year there were 72 water-flood projects in operation. During the year 1941, additional acreage placed under water flood amounted to 1597 acres, making the total acreage under water flood 8454 acres.

The total pipe-line runs of all oil production in Northeastern Oklahoma and Southeastern Kansas for 1941 amounted to 9,636,289 barrels, of which 3,976,390 barrels or 40 percent, was produced from the properties under water flood.

From Northeastern Oklahoma during 1941, the pipe-line runs amounted to 6,261,664 barrels, with 2,970,350 barrels or 48.2 percent coming from the water flood projects. This is an increase of 327,543 barrels over the production during 1940.

From Southeastern Kansas during 1941, the pipe-line runs amounted to 3,374,625 barrels, of which 1,006,040 barrels was produced by water-flood methods. This amounts to 29.8 percent of the pipe line runs for the same period.

At the beginning of this year, the total number of water injection wells on water-flood projects was 3370, and the number of new producers drilled will be only slightly less than that figure.

Total Oil Production

The accumulative total of oil produced by water-flood methods up to the first of this year amounts to 15,525,098 barrels. This production has been obtained with an oil-water ratio of 1 to 11.4, meaning that one barrel of oil was produced for each 11.4 barrels of water injected.

The most outstanding water-flood project, and the best known, is the Forest Producing Corporation No. 1. The original 160-acre pattern having produced up to the first of this year, a total of 1,048,009 barrels of oil, or an average recovery of 6550 barrels per acre. This project was started in the fall of 1935, and is still producing about 20 barrels per day. The production during the first few years was pumped from a central power, but is now being flowed. This project is located in Section 18-26n-17e.

Many other projects have been written up, especially those that start off with a production eight or ten times what they were producing before the water flood was put on.

Taking the projects as a whole, water flooding has been quite successful, and has been a real life saver to the stripper properties, and to the men who making their living operating the stripper properties. There have of course been several properties that failed to respond to this method of secondary recovery, and will be or have been abandoned as unsuccessful. In many of these instances it has not been a question of operation, but because cores were not taken and analyzed, or failure to properly understand and interpret the analysis of the core, or just plain ignornance of the core.

Not Responding

There is a project in Section 4-19n-16e, that is not responding, because an attempt is being made to flood the whole sand section. The upper portion of the sand has sufficient oil saturation that enough oil could probably be produced to make the project pay out, if it were not for the lower portion of the sand which is now at about residual saturation, and which will make it necessary to handle a large volume of water.

There is a project in Section 10-25n-16e, that has failed to respond because the oil is of low gravity and simply moves slowly. Then too the oil content is below average.

The same applies to a project in Section 23-26n-16e, low gravity oil, low saturation, and in this case, also low permeability. It happened to be near a successful project.

There is a project in Section 25-25n-16e which contained a high percentage of water, low percentage saturation of oil, and low permeability, but a satisfactory total oil saturation, due to the thick section of sand. This property produced in its three years of operation only 430 barrels of oil per acre. The injection rate was low, due to the low

permeability, the oil production was light, due to the low percentage oil saturation, and the salt water production was high due to the high percentage saturation of connate water.

A project in Section 7-23n-17e, was not cored. The lease had a good production record for the past 20 years, not much gas to move the oil, and so it was reasoned that the oil must still be in the ground. It may be, but the increase in production has been small, and the investment will be a slow payout, if it does finally pay out.

Then there is the project that was cored, and it was the operators opinion that either the core was not representative, or the analysis was wrong or both, but development is continuing and time will tell. The property failed to respond to gas drive, so in all probability it has a low percentage oil saturation, and the project will be a disappointment.

And, as in all promising oil developments, there was the stock-selling project. Wells were drilled and cored, and the core analysis was apparently intentionally misinterpreted. The development was completed, and a very efficient small plant constructed, but the water failed to move any oil and the stockholders and creditors became impatient. To make a long story short, the promoter is by request of the state, temporarily deprived of his liberty.

There have been other disappointments, and the cause in each case will be about the same as that just mentioned in the other projects. It is easy to look back and criticize, but by these mistakes the rest of us should be able to do better and take less risk in future development.

Recoveries

There are a few projects that have already made a recovery of in excess of 3,000 barrels per acre, and a few more that have reached the 2,000-barrel stage, but these are of course the older projects. The majority of the projects are approaching the 2,000-barrel stage.

In the stripper areas, water flooding has become a recognized and acceptable method of secondary recovery. Just as the gas drive followed the vacuum method, the water-flood method is following the gas drive. Instead of drilling gas-injection wells, and building additional compressor plant capacity, and worrying about a shortage of fuel gas, the drilling is of wells for the injection of water, and also new producers where the old ones are not on proper location, or were never drilled. The building of plants continues, but now it is for the treating and pumping of water into the injection wells. Some operators still have sufficient gas for fuel, and some plants are powered with diesel engines, but the most popular power is electricity, and its cost compares favorably with the overall cost of power from internal-combustion engines. The power requirements being about 1 horsepower per injection well, and about ¾ horsepower per producing well.

The practice of reserving an over-riding royalty, usually a ⅛ interest, in exchange for the lease on which to prosecute a water flood, is about to become a thing of the past. The larger operators do not care to turn loose of their better properties, and a sub-lessee cannot afford to pay the over-riding royalty on the poorer leases.

Costs

The cost of developing a property includes the cost of development, operating, overhead, taxes, and interest. If the flood is successful, the difference between this cost and the income from the sale of oil will leave a profit, a portion of which is return of capital investment in the lease at the time the water flood was started, or in the case of an over-riding royalty, the over-ride would be deducted by the purchaser of the oil, and would be in lieu of the amount classed as return of capital investment, so the remaining net result in both cases would be approximately the same. This will be true on the better properties. On the poorer properties, the cost of development will be the same as for the better property, with the same type of development. The total operating cost, based on the lifting cost per barrel, will be less, because less oil will be produced, so the total cost of recovery which includes development and operating costs will be higher on the poor property than on the better property, thus leaving less for the over-riding royalty or return of capital investment.

The sub-lessee who must operate with an over-riding royalty, will on the poor property, be forced to operate so close that even a 10-percent increase in operating cost will make the net result a loss, while in the case of the lessee operating without an over-riding royalty, the profit on the development investment would approximate 50 percent. A portion of this would be return of investment value before flooding, but the value would be mighty small, probably about one-third of the net profit, which would reduce the profit on the development investment to approximately 33 percent. This operation would be profitable for a lessee, while a sub-lessee would be taking a big chance of coming out with a loss. He would just be swapping dollars for the fun of being in the water-flood business. And as a hedge toward inflation, that might not be such a bad idea, except that the price of crude oil has not gone up in relation to the price of labor and material, so in reality the oil business is in a period of deflation, and will be until the law of supply and demand is permitted to take effect.

Many of the poorer properties will be flooded later but not until a substantial increase can be in propect in probable investment return. The best ones are of course being flooded first, and the income from them will develop the ones not quite so good, and so on down the line, with one treating and pumping plant, paid for by the first project, serving the additional projects.

The poorer properties may be drilled on a wider spacing, say 440 feet instead of the now customary 330 feet, in which case the cost of development and operating would decrease about one-third. This will in many cases be the difference between showing a profit or loss, of course, more years will be required to deplete the property, but the owner will look at it this way: The old producers are there and I can use some of them, I can't sell the property, and no one can afford to pay an over-riding royalty on the property, nor even build the water plant, but with a water plant already operating some equipment that can be salvaged and used, and a bunch of men to keep employed, the lease can be flooded, and while it will not show a loss, it may be a long time showing the profit. The production will probably be flowed, to eliminate the cost of pumping equipment and purchased power, in order to obtain a minimum operating expense. The element of time now becoming a matter of secondary importance.

Thirty-Year Program

If the present rate of development can continue, about 30 years will be required to develop the Bartlesville sand area of Northeastern Oklahoma, and 10 years more will be required to flood the oil out after the development.

The rate of development is beginning to decrease, the cost of material and supplies has risen, and the rate of pay of the workers has been increased in an effort to prevent so many of them from leaving for the higher wages being offered other places. It has been customary for wages to fluctuate with the price of crude oil. Now with the operating expenses all higher, the income cannot be increased because production is always at its maximum, no control is had over the selling price, the rate of return of investment is already established, so it is the development expense that must be cut. Such is the situation at the present time. An increase in the price of crude oil would greatly improve the situation, but not until government priorities, regulation, restriction, and supervision are removed, can the field get back to normal operation and development.

Calculation of Actual and Effective Counterbalance

The effect of counterbalance on equipment loads, methods used in determining the proper counterbalance and factors which might influence the type of counterbalance selected

By EMORY N. KEMLER
Professor of Mechanical Engineering, Purdue University

THE previous article considered in a very elementary manner the reason for counterbalancing an oil well. Any detailed study of counterbalancing must consider in more detail the purpose of counterbalancing, the effect of counterbalance on the equipment loads, the possible methods for determining the proper counterbalance and finally the factors which might influence the type of counterbalance to be used.

As was indicated in the previous article (THE OIL WEEKLY, January 11, 1943) the immediate problem confronting the operator is to see that wells are properly counterbalanced. The selection between types of counterbalance is in general a difficult problem. It involves cost factors which are variable and, therefore, may change from time to time and from one size to another. The familiarity of company personnel with the care and operation of the equipment is also an important factor. Finally as will be pointed out later, care must be seen that the equipment is designed to operate with the particular kind of counterbalance to be used. The fact that some specific type of counterbalance is used herein to illustrate a principle does not mean it is the best counterbalance.

Counterbalancing may in theory be applied to accomplish any one of many functions. It may be applied to equalize the peak torque on the equipment, to make the average torque or horsepower on the up and down strokes equal, to make the peak bearing loads a minimum, etc. It is generally applied to reduce equipment loads or size and as such will probably reduce the peak or average torque. Practically any normal well, when properly counterbalanced for peak torque will have nearly equal up- and down-stroke speeds and power requirements and minimum average torque.

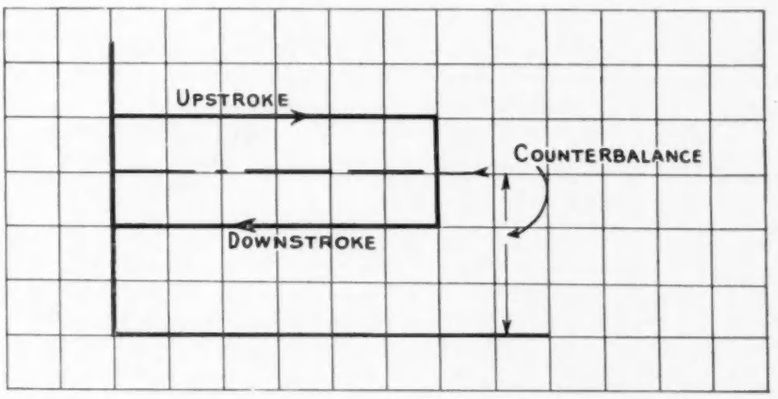


FIGURE 1

Any attempt to calculate the proper counterbalance will require that a dynamometer card be used unless some empirical formula or rule is used. The determination of the proper amount of counterbalance from a dynamometer card may be quite difficult. The method to be used will depend on the purpose of counterbalancing. Three practical purposes are keeping of peak effective load a minimum, keeping peak torque a minimum, and balancing up- and down-stroke average torque or what is equivalent, the up- and down-stroke horsepower. The difficulties involved will depend upon the shape of the dynamometer card and on the degree of accuracy desired. The three results will be identical for the dynamometer card of the form shown in Figure 1. The square type of card is frequently identified with slow-speed pumping. In this case a counterbalance equal to the average of up- and down-stroke loads will result in equal net or effective up-stroke and down-stroke loads, equal peak torques and will make the average torque on the up stroke equal the average torque on the down stroke and will also make the up-stroke power equal the down-stroke power.

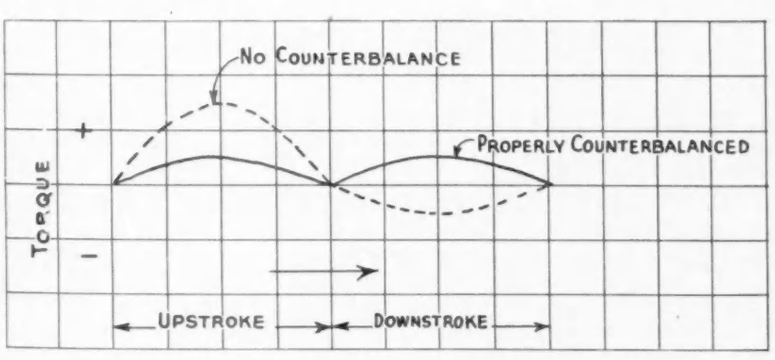


FIGURE 2

Figure 2 shows the torque on the crank or gears for a dynamometer card of the form shown in Figure 1. When there is no counterbalance, the peak torque goes from a positive relative maximum of about .75 to a negative maximum value of about .25. The effect of this variation is, as was outlined in the previous article, to overload the equipment and to result in wide speed fluctuations. When proper

counterbalance is applied the peak torque is reduced to a relative maximum of .25 or will be 1/3 the value with no counterbalance. The peak horsepower with and without counterbalance will have the same ratio with and without counterbalance.

The dynamometer card shown in Figure 1 is an ideal one. The torque curve was calculated on the basis that the motion of the crank was uniform and that the load at the wrist pin on the crank was always vertical. The torque in this case would be calcualted from the formula

$$T = (W_r - W_c)\ R \sin \theta$$

where T = torque
W_r = pull of sucker rods on beam
W_c = effective weight of counterbalance at pitman
R = crank radius
θ = angle between crank and position of crank at start of up stroke

While this formula only approximates actual conditions it will not be much in error, provided the proper values of W_r and W_c are inserted at the various values of θ. This formula and Figure 2 shows that the torque and, therefore, the horsepower required in such an ideal system is zero twice during a pumping cycle. This is at the end of the up and down strokes. Another way of showing this is to consider that the work done is equal to the force times the distance the force moves. Since the polished rod is momentarily at rest when it reverses motion, no work is done during this short time. The power required will be equal to the velocity times the force, and since the velocity of the polished rod is zero at the instant it reverses motion, the power is likewise zero at two positions during the cycle.

In an actual pumping system there is some friction in the transmission to give a slight load at these points. The friction in modern pumping systems is, however, small and if the engine load and speed is to be kept to reasonable values a suitable flywheel should be used. If one is not present, a very unsteady pumping motion will result, which may cause trouble.

When the speed of the prime mover is reasonably steady and the dynamometer card is reasonably flat near the center of the strokes and not extremely high or low at the ends of the stroke the proper counterbalance can be obtained by taking ½ the sum of the up- and down-stroke loads at the middle of the card. Figure 3 shows a type of card to which such a rule would apply. For this case the peak load at the middle of the up stroke will be 10,200 pounds and at the middle of the down stroke will be 2400 pounds. In this case the amount of effective counterbalance required at the wrist pin would be equal to

$$\frac{10{,}200 + 2400}{2} = \frac{12{,}600}{2} = 6300 \text{ lbs.}$$

The calculation of the torque at various points in the cycle, using the approximate method outlined above, can best be carried out using a tabulation system. The calculations for the torque using the formula $T = (W_R - W_c)\ R \sin \theta$ for $R = 20$ inches (40-inch stroke) are listed in Table 1. In order to keep the table small only 30° intervals have been taken. Intervals of 15° are usually desirable and sufficiently close to give good curves. The loads at the various angular positions can be found by laying out a semi-circle on the stroke length and projecting the various angu-

TABLE 1

Angular Position of Crank θ	Sin. θ	W_R	W_c	$W_R - W_c$	T
0	0	7600	6300	1300	0
30	0.50	6700	6300	400	4000
60	0.866	8000	6300	1700	29,400
90	1.0	10,200	6300	3900	78,000
120	0.866	9000	6300	2700	46,700
150	0.50	7200	6300	900	9000
180	0	7000	6300	700	0
210	−0.5	6400	6300	+100	−1000
240	−0.866	4700	6300	−1600	27,700
270	−1.0	2400	6300	−3900	78,000
300	−0.866	3000	6300	−3300	58,000
330	−0.50	5000	6300	−1300	13,000
360	0	7600	6300	+1300	0

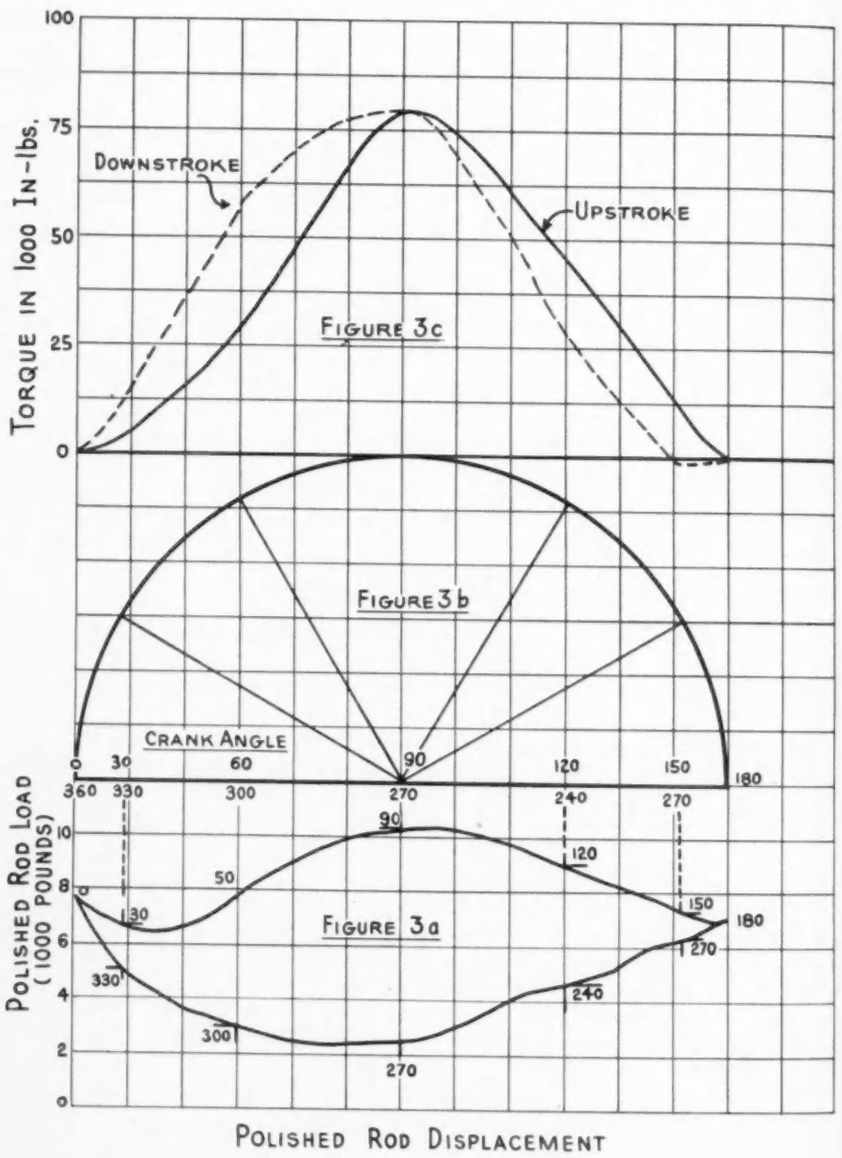


FIGURE 3

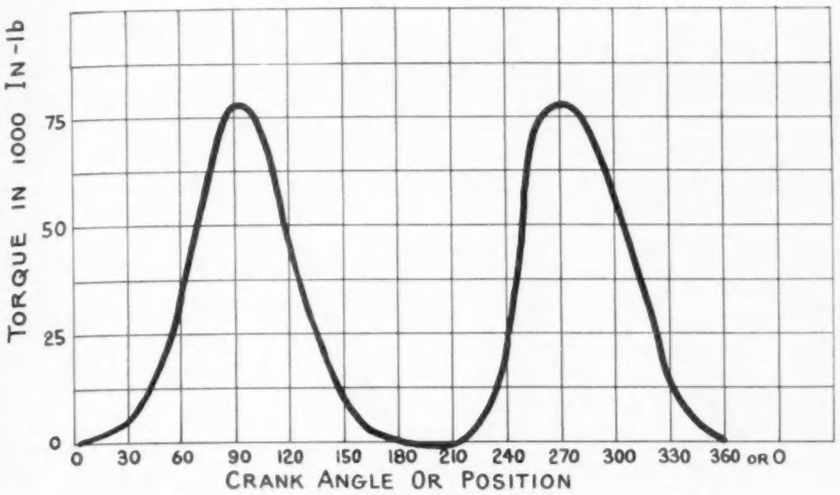


FIGURE 4

lar positions to the dynamometer card. The angles above 180° will have the same intersections as those below, hence only the semi-circle need be drawn. The loads at the various angles are indicated on Figure 3. These load values are then transferred to Table 1 and are listed in the third column. The effective load at the wrist pin will be approximately W_E—W_c. These values are listed in the fifth column. The effective counterbalance is shown in column 4 as 6300 pounds as was determined above. The torques for the various angular positions as shown in the sixth column of Table 1 were determined by using the formula given above. The values of sin Θ are obtainable from any handbook. Once these torque values have been determined, it is usually desirable to plot the results to obtain a better idea as to what they mean and how they vary.

The torque at various polished-rod positions are shown in Figure 3c. This diagram is of convenience only in showing what the torque is at any portion of the stroke. To determine the power required on the up and down strokes it is necessary to plot the torque against angular position instead of polished-rod position. The power will then be proportional to the area under the torque-angular displacement curve shown in Figure 4. By inspection of Figures 3c or 4, it can be seen that the power and torques on the up and down strokes for this type of card are very nearly equal. For the type of card used in Figure 3, it is apparent that the up- and down-stroke peak torques and power can be considered equal for all practical purposes if the effective counterbalance is taken as ½ the sum of the loads at the middle of the up and down strokes. The next article will take into account other factors which are involved in more exact calculations and in more complicated cards.

Once the effective counterbalance has been determined, it is necessary to determine the actual counterbalance which must be applied. The amount of the actual counterbalance may be more or less than the effective counterbalance depending on the position and type of counterbalance used. The effective counterbalance is the equivalent counterbalance at some time in the cycle and some point in the mechanism. For beam counterbalance it is usually sufficiently accurate to take the point at the upper pitman bearing. If this is taken when the crank and beam are horizontal, it will be the same as taking it at the wrist pin on the crank. There are many ways in which beam or equivalent counterbalance can be applied. Figure 5 shows a simple type used with old style steel beams which did not extend past the pitman bearing. The equivalent counterbalance W_E at the upper pitman bearing is shown by dotted lines and can be determined by taking moment about the sampson post bearing. This would give

$$W_E l = W_c a$$

$$W_E = W_c \frac{a}{l}$$

$$\text{or } W_c = W_E \frac{l}{a}$$

Where W_c is the actual pounds weight of the counterbalance installed. These relations show that when the beam weight is placed between the pitman bearing and sampson post, the effective weight is less than the actual pounds of counterbalance used, or more pounds of counterbalance are required than the calculated effective counterbalance. For example, if 12,000 pounds of counterbalance are placed between the pitman and sampson post on a beam for which l is 12 feet and the weights occupy a span of 6 feet along the beam from the pitman bearing, the distance "a" will be $12 - \frac{6}{2} = 9$ ft., since the distance "a" is to be measured from the sampson post bearing to the center of gravity of the counterbalance. In this case

$$W_c = 12{,}000 \times \frac{9}{12} = 9000 \text{ lbs.}$$

In order to reduce the amount of counterbalance, required beams are extended past the pitman bearing as in Figure 6. Figure 7 represents the case of a guided counterbalance which is equivalent to the beam counterbalance. In these cases the effective counterbalance will be more than the actual weight of the counterbalance W_c. The effective weight of a given counterbalance or the amount of counterbalance to give a required amount of effective counterbalance of this type can be calculated from the above equations.

Figure 8 represents a grasshopper type of counterbalance in which the weight is placed on a secondary beam. Both the grasshopper and guided counterbalances are adaptable to wood walk-

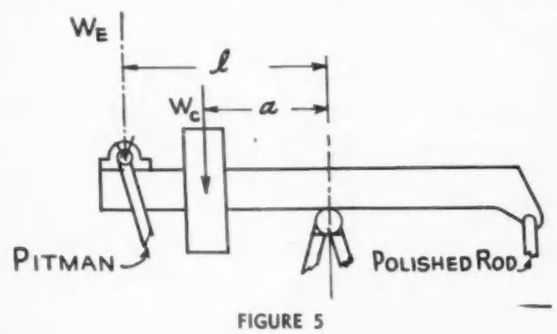


FIGURE 5

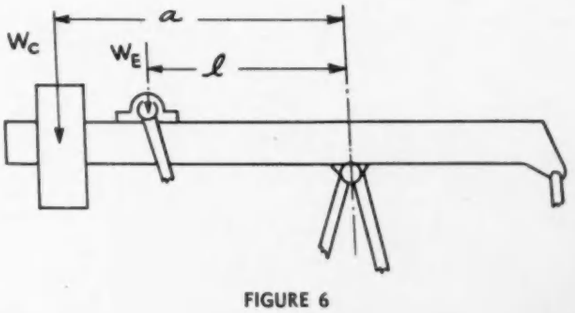


FIGURE 6

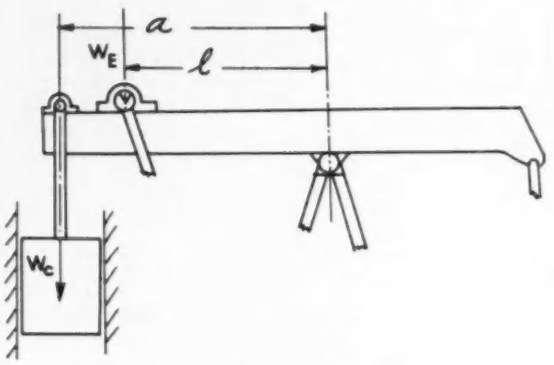


FIGURE 7

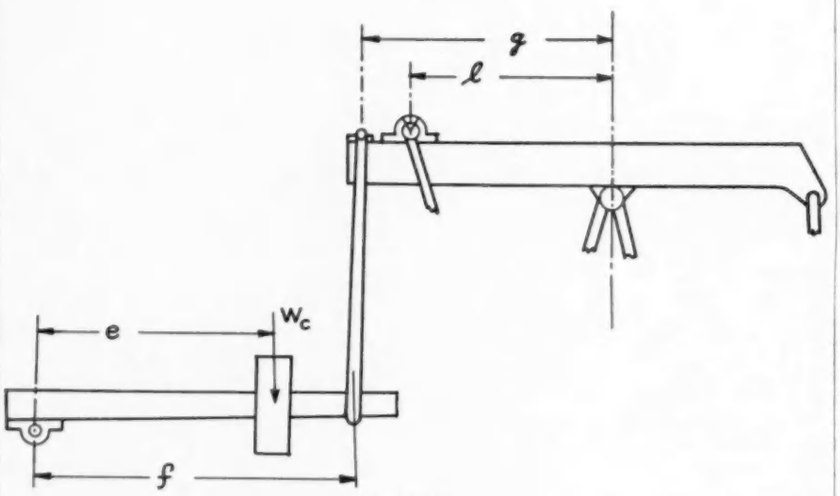


FIGURE 8

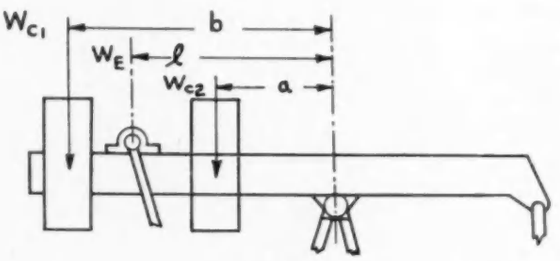


FIGURE 9

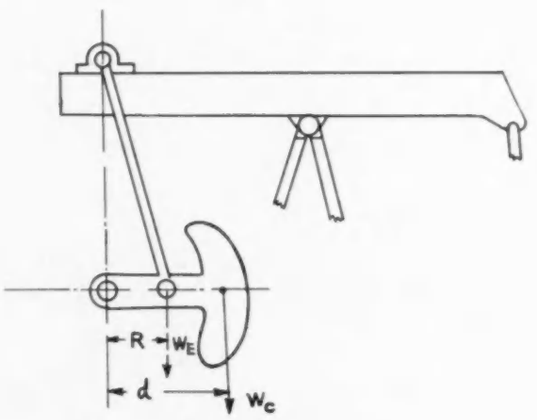


FIGURE 10

ing beams. While they are not as compact or convenient as other types of counterbalance, they can be made with a minimum of critical materials. In the case of the grasshopper counterbalance the effective counterbalance can be determined from the expression

$$W_E = W_c \frac{e}{f} \frac{g}{l}$$

$$\text{or } W_c = W_E \frac{f}{e} \frac{l}{g}$$

If $W_c = 6000$ lbs., $e = 8$ ft., $f = 10$ ft., $l = 12$ ft., and $g = 15$ ft.

$$W_E = 6000 \times \frac{8}{10} \times \frac{15}{12} = 6000 \text{ lbs.}$$

In some applications of beam weights, the weights are placed both ahead and behind the pitman bearing. Figure 9 represents this case for which we can write

$$W_E l = W_{c1} b + W_{c2} a$$

$$W_E = \frac{W_{c1} b + W_{c2} a}{l}$$

$$W_{c2} = \frac{W_E l - W_{c1} b}{a}$$

Many conditions may arise in connection with this arrangement. It may be desired to calculate W_{c2}, W_{c1}, or W_E. The above formulas indicate how these values can be calculated.

The effective weight for rotary counterbalance can be determined by taking moments about the crank bearing. Using the symbols given in Figure 10, we would have

$$W_c d = W_E R$$

$$\text{or } W_E = W_c \times \frac{d}{R}$$

$$\text{or } W_c = W_E \frac{R}{d}$$

We will consider a case similar to the example for which the torque was calculated, which required an effective weight $W_E = 6300$ lbs. and R was 20 inches. If the rotary counterbalance is so designed that $d = 30$ inches, we would have

$$W_c = 6300 \times \frac{20}{30} = 4200 \text{ lbs.}$$

In this case only 4200 pounds of weights would be necessary to give 6300 pounds effective counterbalance.

While these calculations for counterbalance are quite simple, they are not always easily made in the field. Manufacturers of patented rotary counterbalances frequently put out tables showing the effective counterbalance for a certain number and position of weights. Similar tables can be worked out by engineers for various types of beam balances if they are standardized by a given company. Such tables would help the field staff in proper counterbalancing wells when dynamometer cards are used as a basis for calculating the effective counterbalance. The above formulas give a means of calculating the relative effectiveness of various types of balance.

Micromagnetics

A New Quantitative Geophysical Method

An entirely new approach is visualized for future micromagnetic explorations that greatly increases their potentialities

By W. P. JENNY, Consulting Geologist and Geophysicist

THE micromagnetic method is based on the fact that certain strata within the sedimentary column are strongly magnetic, others weakly magnetic and others non-magnetic. This fact has been proved in recent years by the magnetic core-orientation method, by the examination of well cores, by the interpretation of regional and local magnetic anomalies.

If any doubt should still exist, it is easy to convince oneself by sticking a steel needle into the washed residues of well samples. The residues of samples from certain depths will contain sufficient magnetite to cover the needle.

If we allow an equal proportion of magnetite to the stratum as a whole—several hundred feet in thickness and thousands of feet in horizontal extent—we may visualize that sufficient magnetite should be contained in this stratum to actively influence the magnetic field on the surface.

From practical experience it is known that the distribution of the magnetic material may safely be assumed to be consistent within limited regions and that changes in the distribution will as a rule be of a regional rather than local nature.

Inasmuch as the magnetic local effect on the surface decreases at a rate which lies between the inverse square and cube of the depth to the magnetic stratum, it may be assumed for all practical purposes that the shallowest structurally disturbed magnetic bed represents the source of the observed local anomalies. Any shallower magnetic bed, which is structurally not disturbed, will add a constant or, through thickening, thinning, dipping, etc., a regionally increasing or decreasing effect. A schematic explanation of the magnetic effect of various horizons is shown in Figure 1.

From practical experience it is known that for large regions along the Gulf

FIGURE 1

SCHEMATIC EXPLANATION OF THE MAGNETIC EFFECT OF VARIOUS MAGNETIC HORIZONS

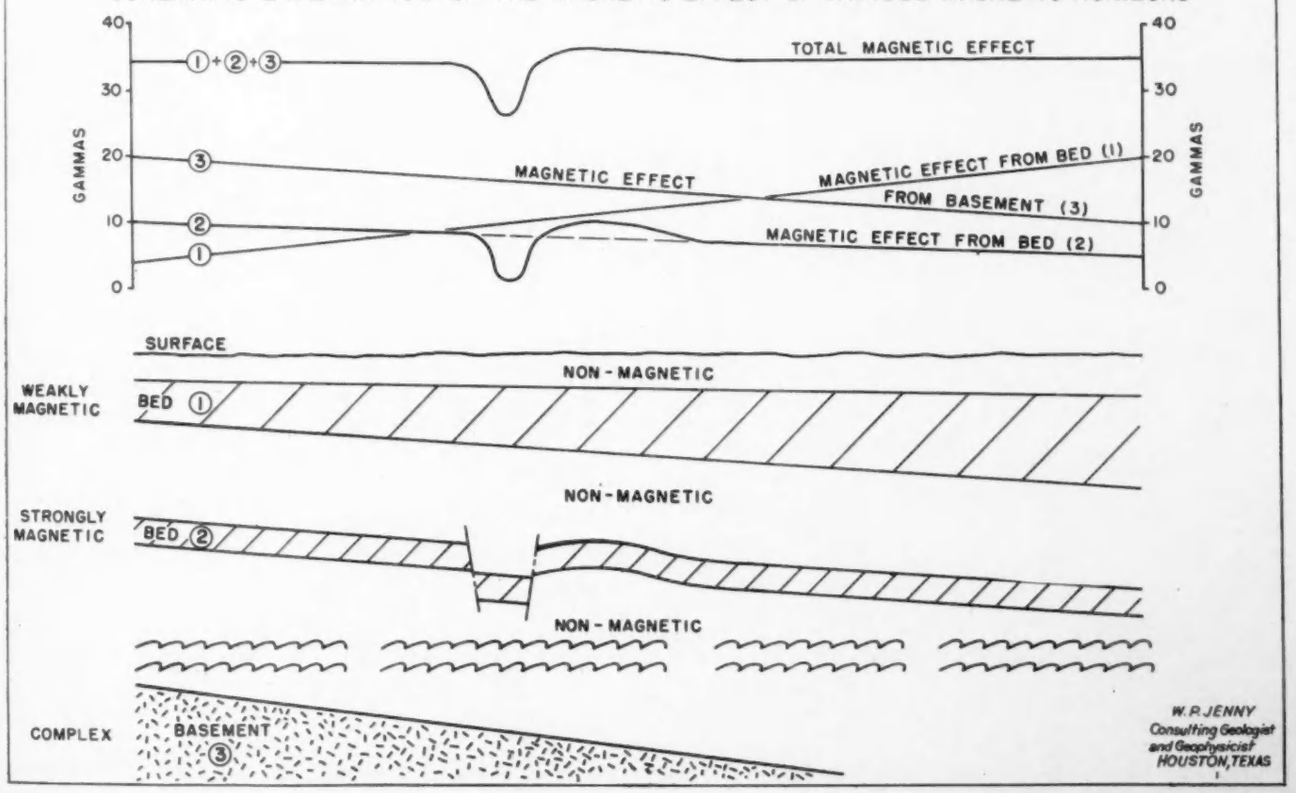


FIGURE 2

MICROMAGNETIC SURVEY
STATION VALUE AND ISOGAM MAP

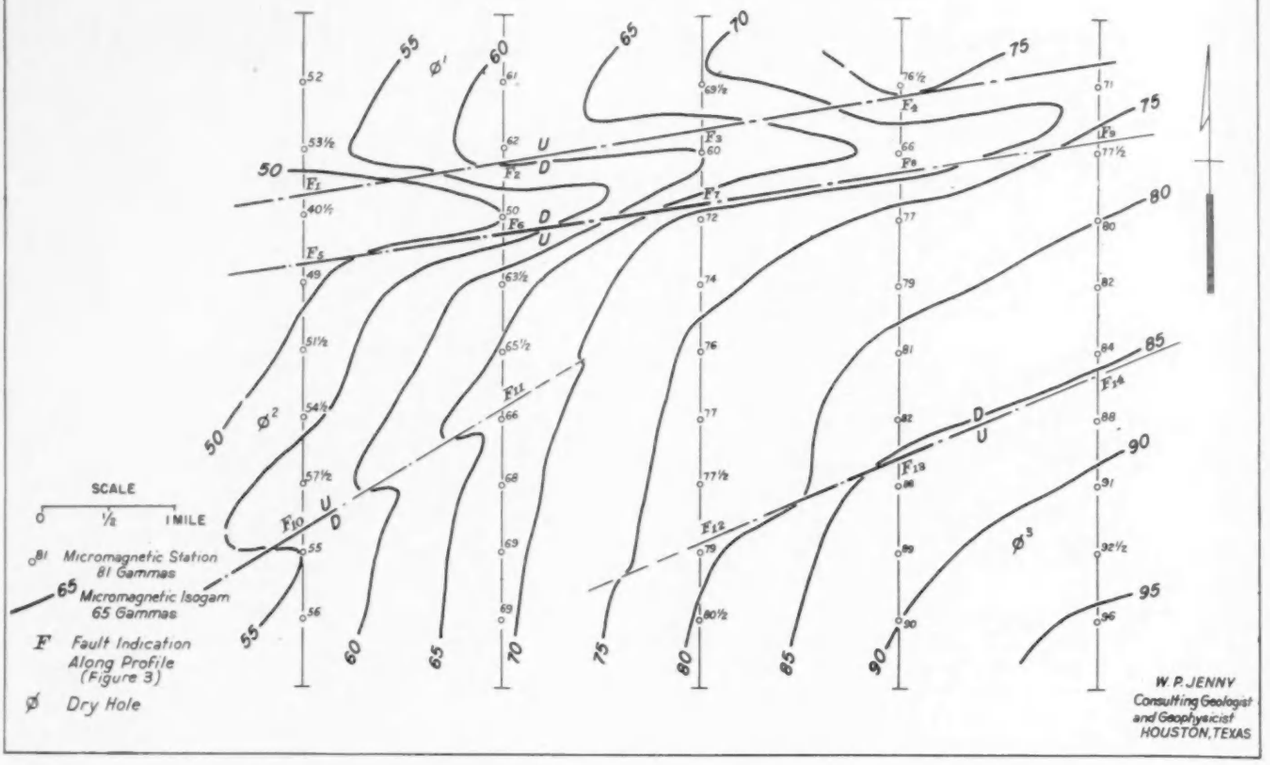


FIGURE 3

MICROMAGNETIC INTERPRETATION
MICROMAGNETIC PROFILES

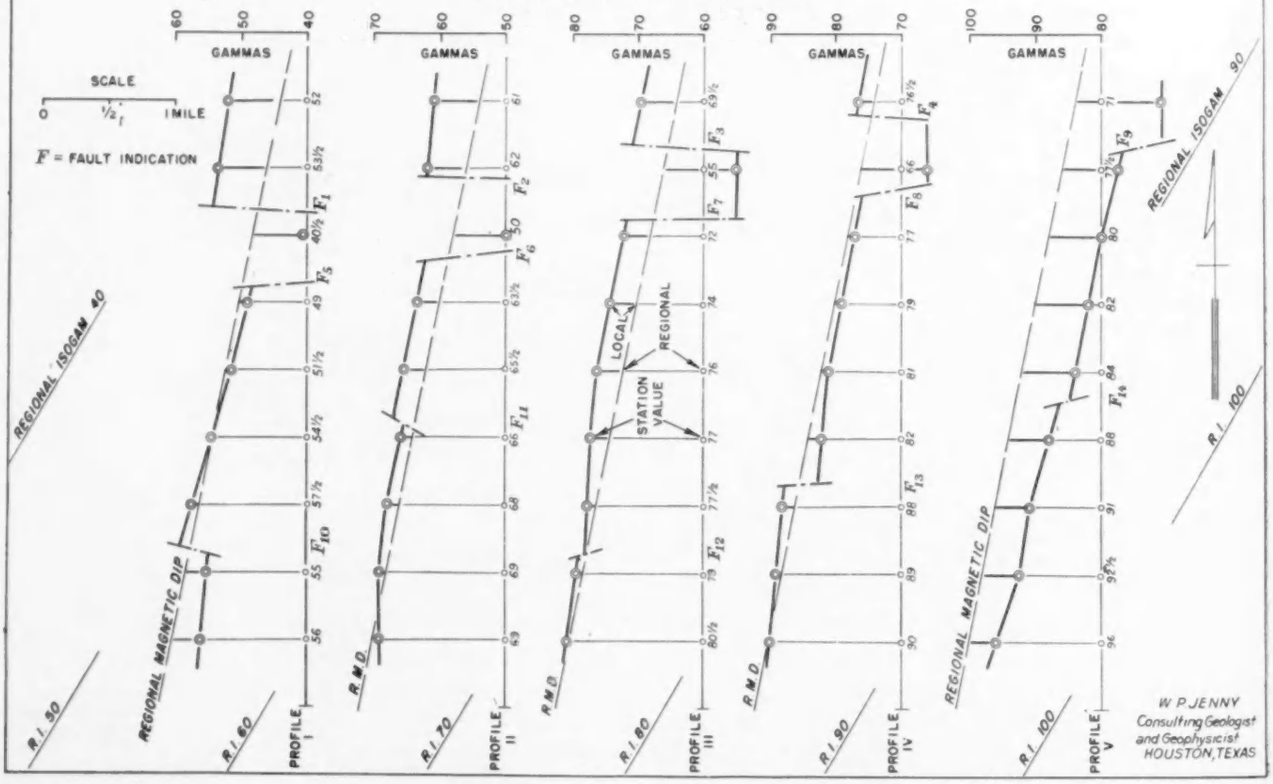


FIGURE 4

MICROMAGNETIC INTERPRETATION
RELATIVE STRUCTURAL CONTOUR MAP

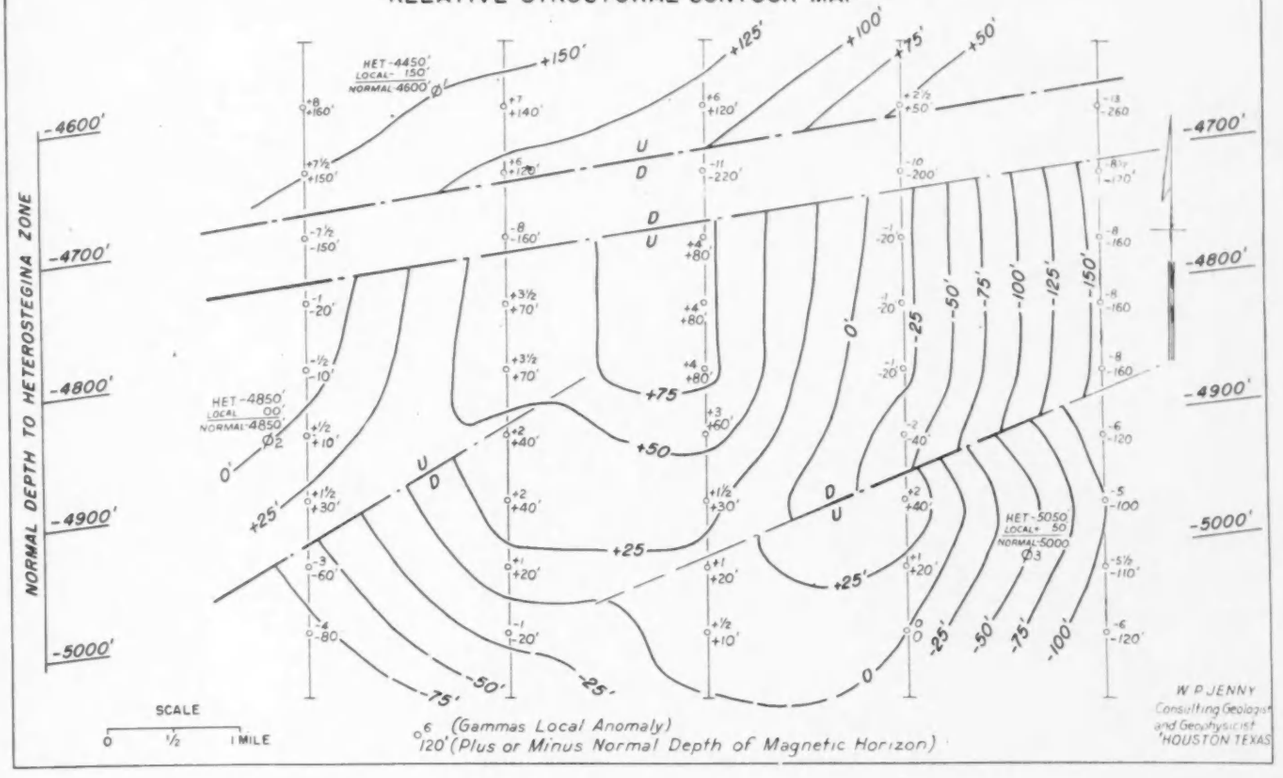
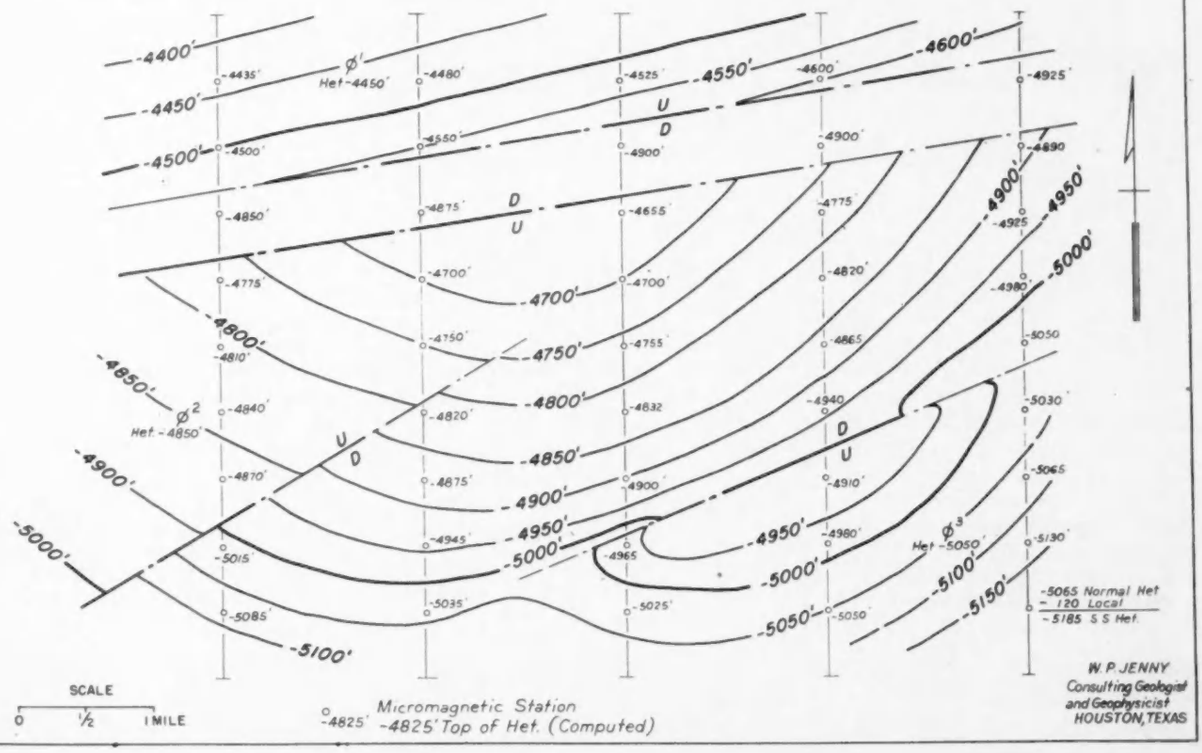


FIGURE 5

MICROMAGNETIC INTERPRETATION
STRUCTURAL CONTOUR MAP ON TOP OF HETEROSTEGINA ZONE



Coast 1 gamma corresponds to some 20 feet on local structures above the Heterostegina zone; along the Wilcox trend 1 gamma corresponds to from 25 to 30 feet on local structures on top of the Wilcox. In other words a 100-foot closure would produce a local magnetic anomaly of 5 gammas or 3 to 4 gammas respectively; a 200-foot fault would produce a 10 gamma or 6 to 8 gamma local anomaly.

It is therefore necessary to survey the area with an accuracy of at least ±1 gamma for each station. With sufficient experience this can be done with the latest type magnetometer; an entirely new approach may be visualized for future micromagnetic explorations.

In Figues 2 to 5 an attempt is made to explain the micromagnetic procedure by a theoretical example.

The micromagnetic data surveyed in the field are represented in Figure 2 by station values and isogams.

These values contain besides local anomalies also certain regional magnetic influences, which must be determined and eliminated. The regional magnetic effect can be determined best by plotting micromagnetic profiles with the station values as ordinates (Figure 3). Each micromagnetic profile follows a certain general course, which represents the regional magnetic dip along the profile.

Within limited areas the regional magnetic dips of the various profiles lie as a rule in a plane. The regional isogams 60, 70, 80, etc., which connect the points of equal regional intensity along the different profiles, are therefore straight lines. Through interpolation between the regional isogams, the regional magnetic intensity for any station point within the area may be determined.

The positive or negative difference between station value and regional intensity represents the local magnetic anomaly at the station point. By allowing 20 feet per gamma local anomaly and connecting the different points of equal footage, a Relative Structural Contour Map (Figure 4) may be constructed.

Inasmuch as we are working on a magnetic horizon, the footage indicated by these contours is to be added to the respective normal depths of this horizon. In areas where no subsurface control exists, the micromagnetic Relative Structural Contour Map represents a close and safe approach to subsurface conditions and corresponds to the Time Map of the reflection method for such areas.

In regions where some subsurface control is available, it is possible to go a step further and construct Sub-Sea Structural Contour Maps. In Figure 4 we note that the three dry holes are located along the relative contours + 150 feet, 0 feet, and —50 feet respectively. This means that well No. 1 is 150 feet too high, well No. 2 is normal, and well No. 3 is 50 feet too low. If the Heterostegina points of these wells are known, the normal depth to the Heterostegina may be determined at the first and third well site by subtracting 150 feet and adding 50 feet respectively.

Inasmuch as three points establish a plane, the normal dip and depth of the Heterostegina zone for the area is therefore determined by the three normal Heterostegina points at the wells.

If the relative values at the station points as given in Figure 4 are added to the respective interpolated normal Heterostegina depths, the sub-sea depth to the Heterostegina at the various station points are obtained and a Structural Contour Map on top of the Heterostegina (Figure 5) may be constructed.

With some modifications this quantitative method of interpretation may also be applied in regions, where the Basement complex is the main source of magnetic local anomalies and where the overlying formations are directly affected by structural disturbances of the Basement, as are for example the Ordovician structures in West Texas.

Though the micromagnetic method, especially the last quantitative step, is relatively new, sufficient practical experience has been gained to establish it as sound in principle and of great potentialities.

MAINTENANCE HINT

Lubricating Device for Kelly

PROPER lubrication of the kelly (particularly the octagonal type) as it gradually slips through the bushing in the rotary table is essential to its smooth operation and to the prevention of jumping or seizing, with resultant injury to the surface.

To assure lubrication continuously provided at this point, the drilling department of one company built up a shop-made lubricating device. Three legs of 1-inch pipe were welded to the bottom of a cylindrical 5-gallon container, and the latter filled with a light grade of oil. The container was elevated high enough to allow a ½-inch line, brought out horizontally from the bottom, to extend across the rotary table some 10 or 12 inches above the top of the bushing.

An old paint brush was lashed to the end of this pipe and adjusted so that as the lubricating oil emerged from the end of the pipe, it would drop on the brush and be applied to the rotating kelly. A small gate valve in the line permits close adjustment of the rate of flow of the fluid. A handhold on either side of the container facilitates moving of the assembly whenever the kelly is removed to add a joint of drill pipe.

With the present set-up a steady, smooth flow of oil is applied at all times without requiring a man for that small job. Since the oil is applied in a small even flow, much less fluid is actually consumed than before.

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Putting Idle Lease Equipment To Work

Eastern stripper producers are fitting idle material into their own operating program, or loaning it to neighboring producers on a rental basis

By F. R. COZZENS, Equity Oil & Gas Company

IN PRE-WAR days, a great many oil producers in the East stripper area had a habit of buying, when the opportunity offered, various articles of equipment such as used engines, an extra string of tools, casing, tanks, line pipe, etc., even when the material was not required for current needs. In many districts, a considerable amount of this equipment is still not in use, yet the owners are reluctant to sell for various reasons, but mainly because it is well within the realm of possibility that some future oil-recovery method will justify the need of some particular machine they now own, and may occur at a time when replacement with new stuff is impossible.

Under present war-time conditions idle equipment if still serviceable is frowned upon, and in divers ways the owners are being made aware of the fact that a stagnant machine, if put to work in the proper place may well be the means of increasing someone's oil production, or reducing his operating costs. In many of the Eastern stripper field districts, where the conservation of material is a major issue, two plans are being used for putting idle equipment to work, and both are proving successful. The first is known as the "prop" or auxiliary plan, by which the owner fits the equipment into his operating program. The second is termed the "farming out" plan, by which the equipment is loaned to neighboring producers on a rental basis.

The "Prop" Plan

The owner of any type of field equipment puts the "prop" plan into action by checking over his operating schedule to discover if and where any of the material can be used to lighten the burden on machinery already in operation, or in replacing materials more urgently needed elsewhere.

One Southern Ohio producer, after checking his field routine, put his idle drilling rig to drilling shallow water wells upon his property. An ample supply of water for lease requirements enabled him to release a pump and 2000 feet of badly needed line pipe which extended to a distant creek. Incidentally, he now uses the pump to boost oil through a short line over a hill, thus releasing a string of line around the hill.

Another operator in the same district is using an idle boiler in heating oil in storage tanks during cold weather. Other operators are using idle motors in pulling rods and tubing from wells, small air-compressors in starting gas engines, and miscellaneous odd equipment in lease work shops, etc.

Producers whose machinery was seemingly running efficiently and at full capacity have been able in more than 70 percent of cases tested, to make savings in time, labor and materials. Schedule check-ups for this purpose generally require a week to ten days, and require especially the cooperation of pumpers and lease crews.

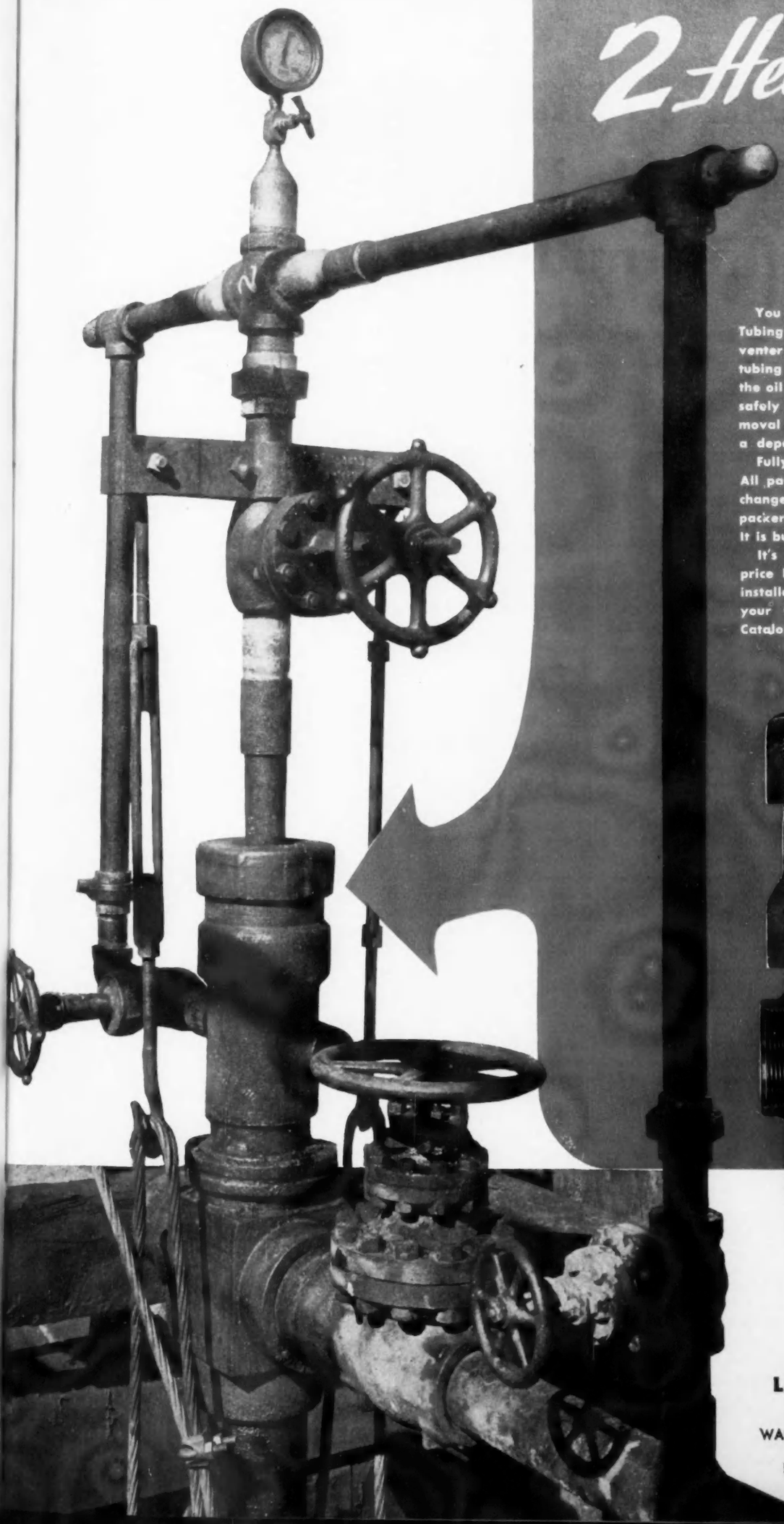
The "Farming Out" Plan

The "farming out" plan of utilizing idle equipment requires tact and considerable caution. The time-worn practice of loaning oil-field materials has, in entirely too many cases, left a bad taste in the mouth, mainly because the privilege was abused. The annual depreciation rate on such machinery ranges anywhere from 5 to 25 percent of its current value, depending on type and manner of use, and a uniform rental fee is practically impossible to determine. Then too, there is always the possibility of equipment being tied up when it is urgently needed at home.

The present setup however, is arranged on a safer, and more business-like basis. The producer needing the equipment generally takes the initiative by checking his schedule to determine, as nearly as possible, the actual worth of the needed material in his program. He estimates (approximately) the number of hours per day or week the equipment will be operated, and the probable length of time its services will be required. Last, but not least, he makes sure of the fact that his lease men are capable of operating and caring for the borrowed material, and that he is prepared to assume the responsibility for damage which might occur from neglect or abuse.

With these data at hand, he calls upon the owner of the material desired, presents his problem, and generally he gets the article. A rental fee, based upon the type of operation is mutually agreed upon. In all cases, the borrower calls for, and returns at his own expense, the material he seeks, and makes all necessary repairs while it is in his possession. The owner specifies the date when the material shall be returned. In some districts, equipment is being loaned among the smaller operators in exchange for labor, rights-of-way, etc., and in certain cases, various kinds of lease material, especially line pipe, is being loaned to farmers and land owners in exchange for team work, property concessions, etc.

Idle equipment which requires too much patching, or too many repairs had best be consigned to the scrap collection, for in all such cases the owner wastes dollars to save dimes. Examination and overhauling of material which has been idle for years, is adding materially to scrap drives, and that is one purpose of the present setup. The main objective however, is to put all serviceable equipment to work so as to lessen the need of new and restricted materials. The oil producer who cooperates in the plan, lightens the burden in his own locality, and performs a patriotic service for both the industry and the nation.



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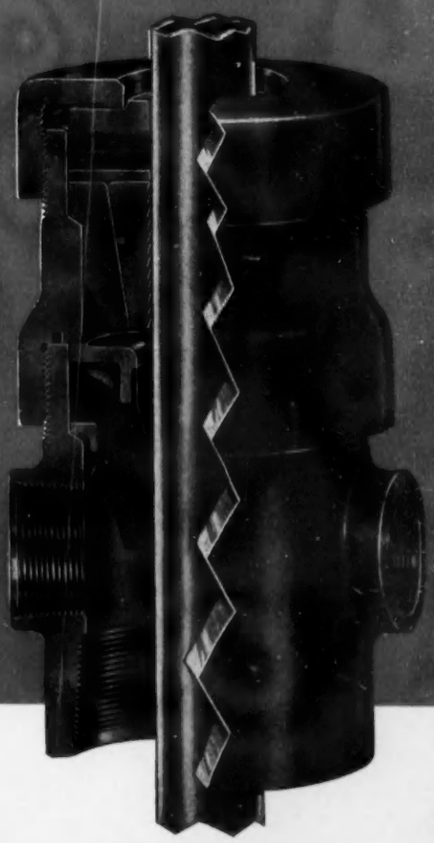

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Computing Lifting Efficiency of Oil Wells Produced by Intermittent Flow

A suggested tentative method for determining the quantity of gas needed to lift a barrel of oil with intermittent flow and kick-off valves

By S. F. SHAW, Associate Professor,
Petroleum Engineering Department, A. & M. College of Texas

THE lifting of liquids by air is performed by utilizing the expansive energy stored in the air under pressure. If hydrocarbon gases are employed for this purpose, the energy stored in the gas under pressure is also the medium by which the lifting is performed, although this gas, when ignited, possesses energy in another form, that of combustion, which cannot be used directly for lifting liquids from wells, but can be employed for operating the engine-compressor units that compress the gas.

The action of compressed air compared with gas, when lifting a liquid, is so similar in action that for all practical purposes there is no need for distinguishing compressed air from other gases that are employed for this work. Careful tests made by the writer in operating oil wells first with air, and then with gas, gave results that showed no observable differences.

It has been customary to compare lifting efficiencies with reference to the expansive energy stored in the gas, and so far, when employing continuous gas-lift, this basis of comparison appears to be superior to any other basis of comparison. With intermittent flow, or with flow in slugs, the same basis of comparison is employed, but owing to certain difficulties entering into the operation, the results are not entirely satisfactory, although it may still be used in conjunction with another method which the writer has employed with satisfactory results.

Behind all calculations is the desire to estimate the quantity of gas under a given flowing pressure that is required to lift a barrel of oil under conditions of maximum lifting efficiency, or of maximum capacity of the eductor. Methods of comparison for determining the quantity of gas required for continuous flow can be worked out fairly satisfactorily, but methods for determining the quantity of gas required to lift a barrel of liquid by intermittent flow are not as satisfactory, and the writer has, therefore, employed another basis for computing the number of cubic feet of compressed gas required to lift liquids when employing the slug-flow type of discharge, which method might be termed the "volumetric method," because of the displacement type of flow that takes place.

Intermittent Flow

Lifting efficiency when displacing oil might be compared, in a measure, with that of the volumetric efficiency of a compressor when compressing gas. The gas in the cylinder is all displaced at the end of the stroke and is discharged, except that which remains in the clearance spaces between the piston and the end of the cylinder, or in the spaces around the valves that are not flush with the cylinder walls. In intermittent flow, gas is injected into the eductor between the slug at a higher pressure than that required to just balance the slug of liquid; it may be injected into the eductor for a slight period after the slug begins to spill over at the top of the well, even though this be at increased expenditure of power; also a portion of the bottom of the liquid slug may tend to drop back into the gas column. These factors tend to reduce the volumetric efficiency of the displacement operation, but a large number of tests seem to indicate that the quantity of gas required for this type of flow can be determined by the volumetric method within about 10 percent of that actually needed. If the quantity used is in excess of 10 percent of that computed as necessary, it would be well to examine the setup for inefficiencies in the manner in which the method is employed.

The method in which gas is employed as the displacement medium consists in injecting the gas under pressure through an opening at a predetermined point below the given column of oil, and to continue the admission of gas until sufficient quantity has been admitted to displace the slug of oil from the eductor. The gas in the eductor follows the oil slug to the surface and is discharged, thereby reducing the back pressure against the formation and again allows oil to enter the eductor, and after another similar time period, determined by trial, the liquid rises to a height where another column of oil is ready to be displaced to the surface.

It has been observed that the major portion of the quantity of oil lifted in slug flow takes place in the early part of the discharge, and is accompanied by a very small amount of gas. After the major portion of the slug has been discharged, the rate of flow of oil gradually diminishes, and the rate of gas flow rapidly increases until the greater portion of the gas that is trapped in the eductor below the slug has been exhausted from the eductor. During the discharge, the lower end of the oil column probably tends to drip back until the falling action is overcome by the velocity at which the action of straight gas-lift takes places. If the gas is allowed to continue entering the eductor from the gas-supply pipe after the slug has been discharged, the action will gradually assume the phase of straight gas-lift, therefore, it is important to shut off the entrance of gas at the time when tests have shown that the optimum quantity of oil has been discharged.

Tests made on slug-flow operations

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should determine the quantities of oil and gas lifted during such flow, the time interval for admission of gas, and the time interval during which the well should remain quiet, in order to set the surface intermitter to admit, and to close off, the gas at the proper intervals. The rate of flow throughout the flowing period of the slug should also be determined by test and plotted, in order to make a complete analysis of the operation.

Measurement of the gas is usually on basis of a cubic foot at atmospheric pressure, but in order to enter the eductor below a given height of oil, the gas must be under a pressure sufficient to balance the column of oil in the educ-

Tables Used for Making Calculations

TABLE 1

Capacities of Tubing

Size, Inches	Weight per Foot Lbs.	DIAMETER External In.	DIAMETER Internal In.	AREA SQ. IN. External	AREA SQ. IN. Internal	CAPACITY In Bbl. per 100 Ft.	CAPACITY Lineal Feet per Bbl.	Capacity in Cu. Ft. per 100 Feet Length Internal Area
1¼	2.4	1.660	1.380	2.16	1.50	0.185	540.54	1.039
1½	2.9	1.900	1.610	2.84	2.04	0.252	398.05	1.415
2	4.6	2.375	1.995	4.43	3.13	0.387	258.65	2.173
2½	6.5	2.875	2.441	6.49	4.68	0.579	172.76	3.250
3	9.3	3.50	2.992	9.62	7.03	0.870	114.99	4.884
3*	10.2	3.50	2.922	9.62	6.71	0.829	120.57	4.654
3½	9.5	4.00	3.548	12.57	9.89	1.223	81.777	6.866
3½*	11.0	4.00	3.476	12.57	9.49	1.174	85.198	6.591
4	12.6	4.5	3.958	15.9	12.30	1.522	65.710	8.545
4*	12.75	4.5	3.958	15.9	12.30	1.522	65.710	8.545

Adapted from tables Spang Chalfant & Co. * Upset tubing.

TABLE 3

Foot Pounds of Work Required to Lift One Barrel of Water

HEIGHT	Foot Pounds	HEIGHT	Foot Pounds	HEIGHT	Foot Pounds
100	35,000	3,100	1,085,000	6,100	2,135,000
200	70,000	3,200	1,120,000	6,200	2,170,000
300	105,000	3,300	1,155,000	6,300	2,205,000
400	140,000	3,400	1,190,000	6,400	2,240,000
500	175,000	3,500	1,225,000	6,500	2,275,000
600	210,000	3,600	1,260,000	6,600	2,310,000
700	245,000	3,700	1,295,000	6,700	2,345,000
800	280,000	3,800	1,330,000	6,800	2,380,000
900	315,000	3,900	1,365,000	6,900	2,415,000
1,000	350,000	4,000	1,400,000	7,000	2,450,000
1,100	385,000	4,100	1,435,000	7,100	2,485,000
1,200	420,000	4,200	1,470,000	7,200	2,520,000
1,300	455,000	4,300	1,505,000	7,300	2,555,000
1,400	490,000	4,400	1,540,000	7,400	2,590,000
1,500	525,000	4,500	1,575,000	7,500	2,625,000
1,600	560,000	4,600	1,610,000	7,600	2,660,000
1,700	595,000	4,700	1,645,000	7,700	2,695,000
1,800	630,000	4,800	1,680,000	7,800	2,730,000
1,900	665,000	4,900	1,715,000	7,900	2,765,000
2,000	700,000	5,000	1,750,000	8,000	2,800,000
2,100	735,000	5,100	1,785,000	8,100	2,835,000
2,200	770,000	5,200	1,820,000	8,200	2,870,000
2,300	805,000	5,300	1,855,000	8,300	2,905,000
2,400	840,000	5,400	1,890,000	8,400	2,940,000
2,500	875,000	5,500	1,925,000	8,500	2,975,000
2,600	910,000	5,600	1,960,000	8,600	3,010,000
2,700	945,000	5,700	1,995,000	8,700	3,045,000
2,800	980,000	5,800	2,030,000	8,800	3,080,000
2,900	1,015,000	5,900	2,065,000	8,900	3,115,000
3,000	1,050,000	6,000	2,100,000	9,000	3,150,000

TABLE 4

Foot Pounds of Work Required to Compress One Cubic Foot of Gas Isothermally to a Given Pressure

Pounds per Sq. Inch	Foot Lbs. of Work	Pounds per Sq. Inch	Foot Lbs. of Work	Pounds per Sq. Inch	Foot Lbs. of Work	Pounds per Sq. Inch	Foot Lbs. of Work	Pounds per Sq. Inch	Foot Lbs. of Work
.....	.....	.....	.....	260	6199	510	7568	760	8392
1	139	20	1819	270	6274	520	7608	770	8420
2	270	30	2354	280	6347	530	7647	780	8446
3	393	40	2782	290	6417	540	7685	790	8473
4	510	50	3137	300	6486	550	7723	800	8499
5	620	60	3441	310	6552	560	7760	810	8525
6	725	70	3707	320	6616	570	7798	820	8550
7	824	80	3943	330	6678	580	7833	830	8576
8	920	90	4156	340	6739	590	7868	840	8601
9	1011	100	4349	350	6798	600	7902	850	8625
10	1107	110	4526	360	6855	610	7937	860	8649
11	1183	120	4689	370	6911	620	7971	870	8674
12	1263	130	4841	380	6965	630	8003	880	8697
13	1341	140	4982	390	7018	640	8036	890	8721
14	1416	150	5115	400	7069	650	8068	900	8744
15	1489	160	5240	410	7120	660	8100	910	8767
16	1559	170	5358	420	7169	670	8131	920	8790
17	1627	180	5469	430	7218	680	8162	930	8812
18	1692	190	5575	440	7264	690	8192	940	8835
19	1757	200	5676	450	7311	700	8222	950	8857
.....	.....	210	5772	460	7356	710	8251	960	8879
.....	.....	220	5865	470	7400	720	8280	970	8900
.....	.....	230	5963	480	7443	730	8309	980	8922
.....	.....	240	6038	490	7485	740	8337	990	8943
.....	.....	250	6119	500	7527	750	8365	1000	8964

TABLE 2

Number of Atmospheres or Compressions Equivalent to a Given Pressure

GAGE	ABSOLUTE 14.7	ABSOLUTE 14.4	GAGE	ABSOLUTE 14.7	ABSOLUTE 14.4
0	1.0	1.0			
10	1.687	1.694	610	42.50	43.361
20	2.361	2.389	620	43.18	44.056
30	3.041	3.083	630	43.86	44.750
40	3.721	3.778	640	44.54	45.444
50	4.401	4.472	650	45.22	46.139
60	5.082	5.167	660	45.90	46.883
70	5.762	5.861	670	46.58	47.528
80	6.442	6.556	680	47.27	48.222
90	7.122	7.250	690	47.94	48.917
100	7.803	7.944	700	48.619	49.611
110	8.483	7.944	710	49.29	50.306
120	9.163	9.333	720	49.96	51.000
130	9.844	10.028	730	50.66	51.694
140	10.524	10.722	740	51.34	52.389
150	11.204	11.417	750	52.02	53.083
160	11.884	12.111	760	52.70	53.778
170	12.565	12.806	770	53.24	54.472
180	13.245	13.500	780	54.06	55.167
190	13.925	14.194	790	54.74	55.811
200	14.605	14.889	800	55.422	56.556
210	15.286	15.583	810	56.10	57.250
220	15.966	16.278	820	56.78	57.944
230	16.646	16.972	830	57.41	58.639
240	17.326	17.667	840	58.14	59.333
250	18.007	18.361	850	58.82	60.028
260	18.687	19.056	860	59.50	60.722
270	19.367	19.750	870	60.18	61.417
280	20.048	20.444	880	60.86	62.111
290	20.728	21.139	890	61.54	62.806
300	21.408	21.833	900	62.224	63.500
310	22.088	22.528	910	62.90	64.194
320	22.769	23.222	920	63.58	64.889
330	23.449	23.917	930	64.26	65.583
340	24.127	24.611	940	64.94	66.298
350	24.812	25.306	950	65.628	66.972
360	25.490	26.000	960	66.31	67.667
370	26.170	26.694	970	66.90	68.361
380	26.850	27.399	980	67.67	69.056
390	27.531	28.083	990	68.36	69.750
400	28.211	28.778	1,000	69.036	70.444
410	28.891	29.472	1,010	69.71	71.139
420	29.571	30.167	1,020	70.39	71.833
430	30.252	30.861	1,030	71.07	72.528
440	30.932	31.556	1,040	71.75	73.222
450	31.612	32.250	1,050	72.43	73.917
460	32.293	32.944	1,060	73.11	74.611
470	32.973	33.639	1,070	73.79	75.306
480	33.653	34.333	1,080	74.47	76.000
490	34.333	35.028	1,090	75.14	76.694
500	35.014	35.722	1,100	75.833	77.389
510	35.694	36.417	1,110	76.51	78.083
520	36.374	37.111	1,120	77.19	78.778
530	37.054	37.806	1,130	77.87	79.472
540	37.735	38.500	1,140	78.55	80.167
550	38.415	39.194	1,150	79.23	80.861
560	39.095	39.889	1,160	79.88	81.556
570	39.776	40.583			
580	40.456	41.278			
590	41.136	41.972			
600	41.816	42.667			

THE FIRST REFINERY TO FLY THIS FLAG

For "*your fine achievement in the production of war equipment*"—the Army-Navy "E" Flag floats today over Shell's Wood River Refinery . . . *the first refinery so honored.*

But a refinery is an inanimate thing; and a flag is but a symbol.

The citation reads: "*To the men and women*"—for it *is* men and women, the men and women pictured here, who through loyalty and devotion to duty, have done so much in building this Company and bringing to it the honor the flag symbolizes.

SHELL OIL COMPANY, INC. SHELL

tor, in fact, it must be under a somewhat greater pressure in order to overcome the friction loss of the oil in passing through the eductor at the given velocity. This velocity probably is accelerated as the top of the eductor is approached, which is probably of advantage in evacuating the eductor as rapidly as possible, consistent with the use of a quantity of gas that is not excessive. The quantity of free gas employed in the operation must, therefore, be computed on basis of the pressure required to perform the operation.

If the length in the eductor of the oil column that is displaced is deducted from the total effective length of the eductor, that is, from the surface to the point where the gas is injected, there remains the number of feet in the eductor that is occupied by the gas. If the quantity of gas in the eductor be computed on basis of the pressure required to balance the length of the slug of oil that is displaced, there will result the *minimum* quantity of gas required to lift this slug of oil. If this quantity of gas be taken as the basis for calculations, and then divided by the quantity of gas that is actually measured as that which displaces the slug of oil, there results a figure that can be termed the "volumetric efficiency" of the operation.

If desired, the figure for volumetric efficiency can be compared with the number of foot-pounds of work that is performed by the expansion of this quantity of gas under isothermal expansion, in order to arrive at a comparison of efficiency between the two methods of lifting, that is, that due to the expansive energy of the gas when using straight gas-lift flow, and that resulting from volumetric displacement when using the slug type of flow.

It has been found that for low percentages of submergence, the displacement type of lifting, when using gas, is considerably more efficient than the expansive type of flow when using straight gas-lift. On the other hand, when high percentage of submergence obtains, the straight gas-lift type of flow is more efficient, and is capable of lifting a greater daily quantity of oil through an eductor of a given diameter than the slug type of flow.

In order to illustrate the method of computing lifting efficiency based on volumetric displacement, an actual example is given herewith, together with tables that facilitate the calculations. The following conditions were found to apply to a well in Coastal Louisiana:

Diameter of casing, inches	7
Total depth, feet	4118
Diameter of eductor, or tubing, in inches	2.5
Operating depth, feet	3618
Barrels liquid lifted per day	123
Barrels of oil lifted per day	32
Cycles per day	72
Specific gravity of the liquid	0.9
Operating pressure	350
Input gas-factor, per barrel liquid	800

For convenience in making calculations, the following order of listing the data is observed:

Barrels per cycle (123/72)	1.71
Feet in eductor of 2½-in. occupied by each slug (Table 1)	295
Percent submergence (295/3618)	8.1
Pounds per sq. in. submergence (295 x 0.434 x 0.9)	115
Feet of lift (3618-295)	3323
Cu. ft. gas in eductor at 115 lbs. pressure (Table 1)	108
Ratio of compressions at 14.7 lbs. absolute (Table 2)	8.82
Cu. ft. free gas in tubing (108 x 8.82	953
Minimum quantity of gas required per bbl. (953/1.71)	557
Volumetric efficiency (557/800)	70
Footpounds required to lift 1 bbl. of 0.9 specific gravity liquid to height of 3323 ft (Table 3)	1,047,000
Expansive energy in 1 cu. ft. gas expanding from 115 lbs. gauge pressure to atmospheric pressure at 14.7 lbs. absolute (Table 4)	4600
Cu. ft. gas at 115 lbs. pressure required to lift 1 bbl. of 0.9 specific gravity liquid at 100% efficiency . . . (1,047,000/4600)	228
Percent lifting efficiency actually obtained, based on the expansive energy in the gas (228/800)	28.5

The above calculations are based on the assumption that the amount of gas is actually used at 115 pounds gauge pressure. However, if the pressure of the gas is taken as 350 pounds which is the actual operating pressure, the efficiency based on expansive energy of the gas would be as follows:

Expansive energy in 1 cu. ft. expanding from 350 lbs. gauge pressure to atmospheric pressure of 14.7 lbs. per sq. in. absolute	6800
Cu. ft. required at 350 lbs. pressure to lift 1 bbl. liquid at 100% lifting efficiency (1,047,000/6800)	154
Percent lifting efficiency actually obtained based on expansive energy in the gas (154/800)	19.2

Discussion of Example

For the conditions stated, it is believed that the input gas-factor of 800 cubic feet is not the true output gas-factor. Perhaps a considerable quantity of gas accompanied the oil from the formation, that is, to the extent of 300 or 400 cubic feet per barrel, which would reduce the volumetric efficiency calculations below 70 percent, but even with the consumption, for example, of a total of 1100 to 1200 cubic feet of output gas per barrel of liquid lifted, the volumetric efficiency would be 48 percent. The best lifting efficiency that can be obtained by straight gas-lift under the conditions mentioned, on basis of the number of foot-pounds contained in the expansive energy of the gas is approximately 12 percent, which would require 1900 cubic feet of free gas per barrel. The lifting of the liquid in the example given with 1200 cubic feet of output gas at 115 pounds per square inch under the displacement method, compared with 1900 cubic feet under the expansive method of straight gas-lift shows a considerable margin in favor of the slug-type of flow.

Several factors enter into the calculations outlined. It will be noted that to carry on the displacement operation under the method employed, the gas was maintained in the casing at a working pressure of 350 pounds, whereas the pressure actually required to balance the column of liquid was only 115 pounds. The gas is probably admitted to the eductor under the slug of oil at a higher pressure than 115 pounds. This pressure can be determined only by running a pressure bomb below the valve, since nothing in the data observed definitely serves to determine this pressure inside the tubing.

The use of a higher pressure in the calculations would, therefore, reduce the difference between the efficiencies obtained when comparing slug flow with expansive flow. The output gas was evidently not measured, in fact, the measurement of output gas in slug flow in ordinary operations is very difficult. An orifice meter provided with a clock that makes a complete revolution in one hour would be needed for this purpose, but could not be used in routine operations since it would be impracticable to make changes in the chart every hour throughout the 24 hours other than for making tests.

If the basis for calculations for expansive flow be taken at 350 pounds, which is the operating pressure employed in this example, it is observed that the lifting efficiency is not 28.5 percent, but is 19.2 percent. It is necessary to maintain pressure in the casing at 350 pounds in order to admit the gas rapidly through the flow valves and to obtain the velocity of flow that permits 72 cycles per day to be obtained. This storage pressure must be maintained by the compressor plants, if gas from gas wells is not available, and there is a considerable percentage increase in compression cost in compressing gas to 350 pounds as compared with 115 pounds. Where gas is available from a gas well in sufficient volume at 350 pounds, it makes no difference whether the gas be employed at 350 pounds or at 115 pounds, so far as costs are concerned, since the pressure would have to be reduced from 350 pounds to 115 pounds if the lower pressure is used.

In this example, under the same basis of comparison, the tubing would be run only to the operating depth of 3618 feet in expansive, or straight gas-lift flow, and there would be no restrictions to the flow of gas into the eductor, and the flowing pressure might be reduced somewhat below 115 pounds per square inch, which is employed as basis for the above calculations on slug flow. This would make further changes in the comparisons.

Comparisons have been made in various fields when flowing pressures were low, by operating the well on straight gas-lift and then changing to intermittent flow, that is, slug flow, and it was found that not only was the quantity of gas per barrel reduced, but the quantity of oil per day that could be lifted was greater in intermittent flow than in straight gas-lift under these low flowing-pressure conditions.

Californians Renew Plea For Price Increase

WITH benefit of the support of practically all oil-producer associations in California, operators in that state are hoping to obtain from the Office of Price Administration authorization of a substantial increase in ceiling prices of crude oil and of heavy fuel oil and other products except gasoline, asserting that the increases are necessary for avoiding a seriously threatened shortage of the oils involved. The shortage may become acute as early as the coming summer, the California producers declare, unless the advocated preventive in the form of a price revision is used.

The California Oil & Gas Association's executive committee recently adopted and forwarded to key officials in Washington a strong resolution asking an increase of 50 cents a barrel in the ceiling price of California heavy-crude oil and an increase of 68 cents a barrel in the ceiling price of fuel oil, diesel oil, and asphalt. The increases were described as necessary to compensate for additional development, refining, and marketing expenses. That association represents more than 90 percent of the petroleum industry on the Pacific Coast and its membership is engaged in all three divisions of the industry, including production, refining, and marketing. The resolution was transmitted to R. K. Davies, Deputy Petroleum Coordinator, for the consideration of Harold L. Ickes, Petroleum Administrator for War, and to Sumner Pike, Director, Fuel Price Division of the Office of Price Administration.

Adjustment of price ceilings is being asked because of the heavy drain on available surface inventories of heavy oils from which fuel oil, diesel oil, and asphalt are manufactured. Those products have been coming out of storage for the past two years at a substantial rate.

A spokesman for the executive committee said that the resolution was being sent to Washington because at appeared that the oil supply situation on the West Coast might soon become a serious national problem, in view of the Pacific war being dependent upon California fuel-supply sources, unless immediate steps were taken to meet the situation. He stated that nearly 16,000,000 barrels of fuel oil had been withdrawn from storage during the past two years to meet the demands of the armed services and civilian industry in the Pacific area and that remaining fuel oil stocks totaled less than 45,000,000 barrels. Of the remaining amount, a major share was described as unavailable for consumption because of the large quantities needed as working stocks. One-third of all fuel-oil inventories in California would be required, it was pointed out, merely to fill the new 24-inch pipe line being built to carry oil from Texas to the East Coast.

Five specific recommendations to the petroleum administrator were embodied in the resolution, as follows: (1) Price adjustments to stimulate exploration, development, and production; (2) assurances with respect to maintenance of existing tax provisions; (3) relaxation of restrictions on use of existing equipment and materials; (4) new materials and equipment in quantities necessary; and (5) maintenance and augmentation of necessary manpower, especially in skilled labor classifications.

The above and similar recommendations have been endorsed also by most of the other producer groups in California, including Oil Producers' Agency of California, California Stripper Well Association, and San Joaquin Valley Oil Producers' Association.

The constant drain on California heavy-oil stocks which has been under way for two years apparently cannot be offset when prices are low, because of the high expense ratio in producing oil wells in old fields, the primary source of heavy production on the West Coast. There are also some heavy flush fields, such as Santa Maria Valley and others in the Santa Barbara County district, such as Gato Ridge, Lompoc, Cat Canyon, and others, but a large increase in handling facilities is needed to make that oil available. In addition, most of it is high sulphur content and is not as desirable to the refiner as San Joaquin Valley heavy crudes such as those produced at Mount Poso, Kern River, Midway.

There is no argument against the view that the California industry should and could, if prices would permit, switch from a gasoline economy to a fuel-oil economy. But so long as the price structure on crude and the products derived from it continue in the present relationship, the practicable decrease in gasoline production and increase in fuel production is limited.

To remedy this situation, stimulate drilling and exploration, and expand all field activities in general, the price increases have been proposed.

Speaking on a nation-wide broadcast, a news commentator, John B. Hughes, recently discussed the West Coast oil situation. "Here on the West Coast," said he, "where approximately 22 percent of the nation's petroleum is produced, the demand is now exceeding the supply and existing stocks are being depleted at the rate of about 90,000 barrels a day. Demand, set by the government, and completely controlled, has recently been increased. At the present rate of use, for war, all excess inventories will be gone before the end of this year—and if war demands increase in the Pacific, as most observers believe they will, these excess inventories could be gone by the middle of this summer. Then the petroleum production on the coast will be far less than the requirement. I repeat, the wartime demand now averages about 90,000 barrels a day more than the production in this area, and can be filled only because of the supply on hand—the so-called excess inventories. Actually, this excess, or reserve, is about 30,000,000 barrels less than it was 3 years ago."

Commenting on the pleas for advances in crude- and fuel-oil prices, Hughes stated: "In peacetime the industry economy was based on gasoline. But not today. Gasoline comes close to being the by-product due to the tremendous demands for the fuel oils that run the motors of ships at sea, engines on the railroads, trucks on the highways, and the machines and furnaces of heavy industries producing for war . . . and the demand for asphalt to pave the landing strips of hundreds of air bases used by our fighters, bombers, and transports around the world. The industry shifts from a gasoline economy to a fuel-oil economy. The old by-product prices will not cover the expansion necessary if the probable demand is to be filled."

Relaxation of restrictions on use of existing equipment is also urgently advocated by California producers.

PRACTICAL OPERATING *Hints* FOR

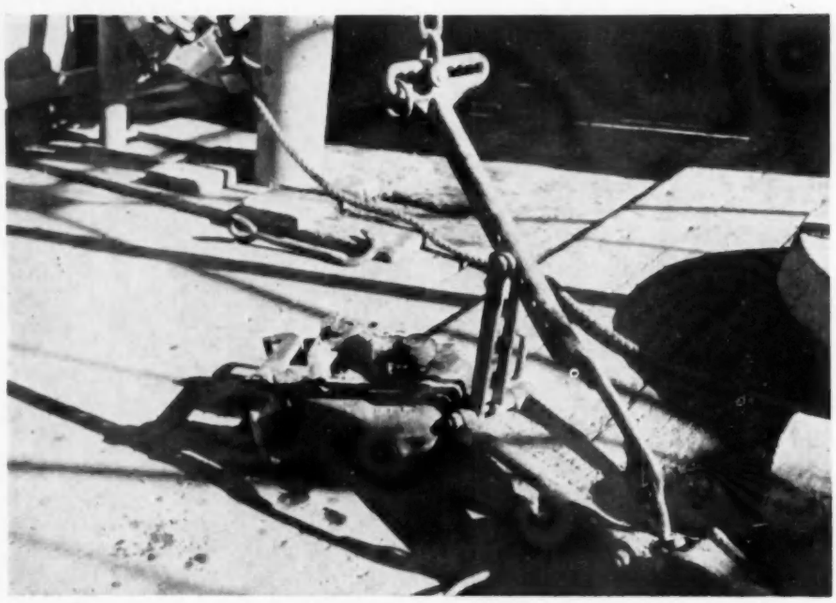
1. TONG HANDLING

Support Ring Saves Jaw-Changing Time

FREQUENT changing of the jaws of the tongs is a source of lost drilling time. Not only is it necessary to support the tongs while jaws are being handled, but when jaws of different size are put in it is usually necessary to remove the counterweight line clevis and shift it a few notches one way or another in order to keep the reassembled tongs on an even keel while in use.

One company makes quick, easy work of this operation by a combination of two simple ideas. One of these consists of installing a welded steel ring of two or three inches in diameter, in the slot beside the clevis, and leaving it there permanently. With this ring, it is a simple matter to loop a line through it and tie the other end to a derrick girt to support the tongs while the clevis is removed and reinserted in its new position in balancing the reassembled tongs.

The companion idea consists of anchoring the tong counterweight, which is outside the derrick, in such a way that the weight box will not fall down, pulling the tong line up out of reach in the derrick, as well as making it necessary to rig up lines in order to hoist the weight up again. On this particular rig a short piece of 3-inch pipe, to which was welded or clamped a short length of 6-inch pipe filled with water or any waste material, was made to slide up and down a 20-foot section of upright 2-inch pipe mounted outside the derrick members. To anchor in place, holes were drilled through these two pieces of pipe at a point which brought the tongs about waist height, and a bolt was then slipped through them, securely holding the weight while the tongs are worked on.



Welding supplemental ring in tong balance recess permits attaching temporary line when shifting clevis to balance new jaw equipment, while anchor prevents "skied" line during shift.

2. MUD TESTING

Electric Mixer Aids Sample Uniformity

MUD testing in the field, particularly on wildcat wells, is not conducted under most favorable conditions at best, and to facilitate such field testing and bring about more accurate results, a California company adopted the practice of mixing mud samples with a household electric mixer.

Plugging into a convenient 110-volt circuit, the mixer will speedily mix samples containing experimental quantities of chemicals which will be added to the drilling mud in the same proportions. Thorough mixing assures the engineer that his sample will have the same properties as the finished product after the latter has been circulated through the pumps and well. On wildcat wells in particular, where formation conditions are unknown, it is good engineering practice to take every precaution in seeing that the mud column is adequate to cope with any unexpected high pressure condition.

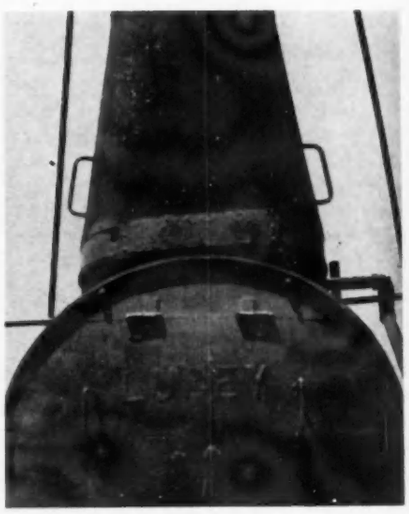
Familiar kitchen utensil serves to attain a uniform stirring of mud and chemicals.

3. RIGGING UP

Guide Grips Assist Centering of Stack

STEERING the base of a stack over the bonnet of a boiler, with the unit suspended from a winch line and wind keeping the unit in motion, is a difficult job which has resulted in many injuries.

One company equips its stacks with heavy loops, attached to each side of



Welded to the stack at or just above the breeching ring, these grips prevent many hand injuries.

THE DRILLING RIG

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston.*

the stack just above the bottom stiffener ring. The handholds are made wide enough to insure a firm grip, and are of a great value in manipulating the stack into place.

Provision of a convenient and effective grip on the stack eliminates the tendency to grip the lower rim of the unit, and thus to expose the hands to injury between stack and bonnet rings. With the built-on grips, the hand is fully protected, even should the stack be lowered onto the boiler shell alongside the bonnet ring.

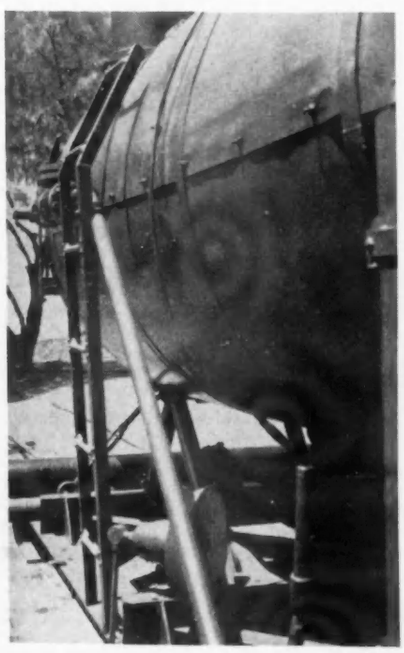
4. SAFETY

Semi-Fixed Ladder Cuts Accident Rate

A NEAT and semi-permanent ladder installation to permit necessary servicing of safety valves, steam valves and other equipment atop the boilers is standard on the rigs of one drilling contractor.

The ladder, fabricated from light angle sections and rolled or sucker rod steel, is bolted to notches or sockets in the horizontal member of the boiler skid, the upper end being braced by attaching to the feed-water line with hook bolts and thus holding the ladder a slight distance away from the sheet iron covering over the boiler lagging and preventing the ladder from being heated to the point where it would be difficult to retain grasp of a round with the bare hands.

With such a ladder, in place of the usual wooden unit, danger of slipping is avoided, and the unit is always in place when required.



Set on pins in the skid member, and clamped to water line, this ladder is always available for adjustments.

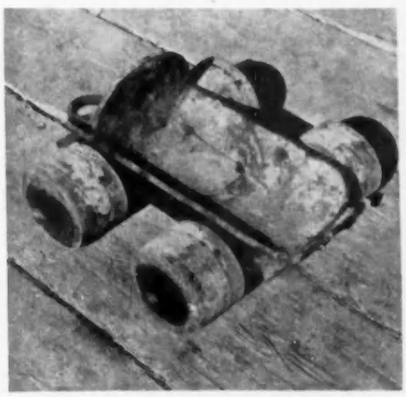
5. PIPE HANDLING

Pump Pistons Wheel Unique Kelly Buggy

TO FACILITATE handling kelly and drill-collar joints — particularly when laying down or picking up from the walk — many companies have devised small wheeled buggies on which the lower end of the joint may be rested to protect the threads as well as making it easier to pull along the walk. An improvement in this type of buggy was devised by the drilling foreman of one company, using old or discarded slush pump pistons for wheels.

Four pump pistons, with rods cut short, were assembled on the bottom side of a cutaway section of 8-inch casing in the manner illustrated. The casing section was welded to the top side of a flat steel plate, and on the bottom side were welded short sections of pipe through which the piston rod axles were passed. A back stop and tow-ring were welded into the head end of the buggy.

Several advantages have been found in using the rubber pump pistons instead of regular iron wheels. Not only are the former cheaper, there being a number of such pistons available in the scrap piles of nearly every company, but the broad wheels provide a very firm support and the buggy follows a straight, steady course when it is wheeled along the walk beneath a heavy load. Because the wheels are rubber, and somewhat wider than ordinary iron wheels, the buggy is less likely to skid sideways should the load be shifted suddenly to one side.



Reclaimed slush pump units, with axles of shortened rods, this all-welded buggy speeds pipe stacking.

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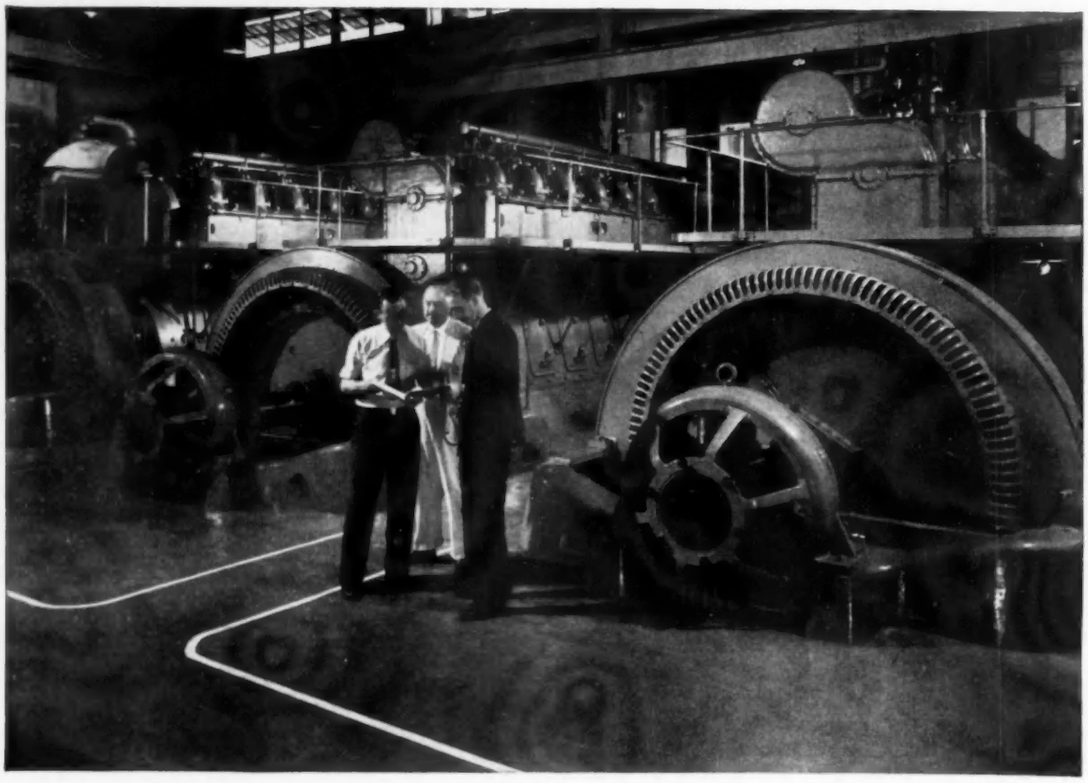

After 12,000 hours operation with Gulf Quality Diesel Lubricating Oil:

✓ Negligible bearing and cylinder wear.

✓ Rings, pistons and valves in almost perfect condition.

ANOTHER example of better lubrication with Gulf Diesel lubricating oil! A recent check-up of these three Gulf lubricated 1000 hp. Winton Diesels after 12,000 operating hours showed: (1) Negligible bearing and cylinder wear, (2) Rings, pistons and valves in almost perfect condition. And during this 12,000 hour period, no repairs of any kind were necessary to lubricated parts.

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GULF INDUSTRIAL LUBRICATION

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

THE question of crude prices held the center of the stage in Washington last week, as OPA and PIWC lined up for the first major fight to confront the new price administrator, Prentiss M. Brown.

On the heel of the Traffic Commission report on 1941 conditions, OPA announced it would make no general increase in crude prices, but held out to operators a promise of piecemeal revision for producers in any area who could make a decisive showing of the need for a better price

Less than 24 hours later the industry council demanded that ceilings be raised 25 cents a barrel, warning that unless action was taken quickly the country might find itself unable to meet military requirements next year

Supporting a lengthy report on production costs was another report on 1942 discoveries showing that if every gallon of oil now estimated to be in the new fields and horizons is secured, the total will represent but little more than half of the amount withdrawn during the year

The reserves report, prepared in PAW, placed reserves proven in 1942 at between 421,000,000 and 800,000,000 barrels, while 1942 production is estimated at 1,385,000,000 barrels.

In Washington during the week was a British oil mission, headed by Geoffrey Lloyd, minister of petroleum, to discuss United Nation's oil problems and possibly also to plan for the 1943 military moves worked out at Casablanca, Africa, last month by President Roosevelt and Prime Minister Churchill.

Reissue of the WPB M-68 order controlling the drilling of wells as a petroleum administrative order is expected in the near future, possibly as the spring board for the introduction of selective development.

Seen by many in the industry as inevitable, although painful to those with holdings in the wrong areas, selective drilling has been the subject of much discussion as the best possible "trade of steel for oil." Under a selective system, the drilling of wells would be permitted only in fields which could be shown to have adequate transportation to move the oil to refineries which could use that particular grade, a potential production justifying the expenditure of the steel and the type of oil needed for war products. Need for some such system, it is said, is based on the fact that very little material is available for drilling, transportation is short and demand is greater than ever.

The Florida barge canal again became a point of congressional controversy during the week, with members of the House debating the project pro and con. A bill to repeal the authorization for construction granted last year was introduced February 3 by Representative Dondero of Michigan. On the other hand, Representative Mansfield of Texas, who was largely responsible for the enactment of the authorization last session, declared the facility now is needed more than ever, since it would serve to reduce the cost to the government of underwriting the increased transportation expenses of oil companies, which he placed at $250,000,000 a year now and $400,000,000 when recently adopted methods, such as the drum shipment of kerosine, get into operation.

As the week drew toward a close, the War Production Board was menaced by the worst internal dissention yet developed, the result of an order by Charles E. Wilson, production vice chairman, fixing a deadline of February 6 for the placing of orders involving any of 34 critical components used in the production of rubber, aviation gasoline, ships and air craft, the major war programs. Purpose of the order was to develop a complete picture of the 1943 demand for such components, but it resulted in confusion in many plants which could not place their orders on such short notice and some of which, in fact, had no clear idea what they would require even in the comparatively near future.

Wilson's order to some extent invaded the field of Ferdinand Eberstadt, vice chairman in charge of materials distribution, and a row resulted.

PIWC Clamors for 25-cent Crude Raise After OPA Says No

Ickes Insists Aviation Gasoline Plants All Be Built

Nelson Disapproves Patterson's Car Confiscation Plan

PAW Report on 1942 Discoveries of Reserves Released

By B. F. LINZ
Washington Correspondent

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Industry Assigned Steel, Copper, Aluminum Quota

The amounts of soft steel, copper and aluminum to be used by the oil industry during the second quarter of 1943 have been fixed under allocations of those materials by the War Production Board among the 14 claimant agencies, which includes PAW and Office of Rubber Director.

Full provision has been made in the allotments for the "must" programs on synthetic rubber, and high-octane gasoline, but the less essential programs have been cut to the bone, officials said.

Divided among the 14 agencies were some 17,000,000 tons of steel, 15,000,000 tons of which was carbon steel and 2,000,000 tons alloy steel; 600,000 tons of copper and about 600,000,000 pounds of aluminum. Details of the allocations were kept secret for military security.

Jeffers Says Rubber Not Being Produced And Tells Congressional Committee Why

Not a single pound of synthetic rubber has yet been manufactured in a government-owned plant in this country, due to Army and Navy interference and bickering over priorities, it was declared February 1 by Director William M. Jeffers.

Jeffers appeared before a joint Naval and Military Affairs Subcommittee of the House to explain statements made by him a week earlier in Baltimore, where he charged too many "experts" and "expediters" were slowing down the rubber program.

He held steadfast to the view he expressed in Baltimore, but explained that he had not referred to "Army and Navy loafers" but to the "Army and Navy and loafers." But, he declared, there are still too many "experts."

"It seems to me the job of the Army and Navy is to fight and not attempt to run business.

"The whole controversy has been in getting priorities from the War Production Board. The worst difficulty is to get decisions as to what is first and what is second. There are too many people still experting on the rubber program."

Jeffers complained that while there have been a lot of conferences on priorities for rubber plants, no decisions have been made that "seem to stick."

Discussing military interference, the rubber director said he had been told the Navy had from 10,000 to 15,000 "expediters" in defense production plants and is seeking more.

"Filling up these plants with so-called expediters who tell the superintendent how to run his own shop are among those things that are delaying production," he commented.

In support of his views, he read from a letter written by a defense worker

whose name was retained in confidence. The writer declared that many inspectors "certainly impede production. They seem to think we are building ornaments, instead of armaments."

Jeffers testified that, because of "confusion, clashes of personalities, too much experting and too little two-fisted direction," little progress was made on the rubber program between the spring of 1942 and the submission of the Baruch report.

However, he admitted, little has developed since he made his first progress report in November, except a series of "resistent discussions" over priorities, and the delay has become so serious that it has not only endangered the entire rubber program but has delayed other related war programs.

He explained that there is little difficulty in procuring materials for the construction of plants, but the productive machinery to go into them has been lacking because the Army and Navy claimed they needed the equipment.

In response to a request for his views as to the most important things in the war program, Jeffers said:

"The armed forces come first as to rubber.

"One-hundred-octane gasoline is important.

"Aid to our allies comes next.

"Essential driving and farm production next.

"What is left we, the people, get."

Ickes Contending for Full Gasoline Program

Suggestions by Under Secretary of War Patterson that the government requisition the spare tires of civilian motorists and also take 7,000,000 civilian cars were given the definite approval of Administrator Ickes February 4 as a means of getting rubber for military purposes.

Ickes position, however, was largely predicated upon the interference with his 100-octane gasoline program which would be offered if the plans of Rubber Director Jeffers were carried out in full.

The administrator made it plain that he was not satisfied with the decision of Stabilization Director Byrnes cutting both the gasoline and rubber programs, although he admitted that had he been in Byrnes position he could have reached no fairer conclusion, and said he would continue to fight for the full program which he had outlined, details of which, of course, could not be revealed because of their military importance.

Aviation gasoline, he said, should be one "of our primary objectives," but is not being produced in the quantities desired. While all military demands have been met, he disclosed that this was possible because the Army and Navy knew the situation and adjusted their requirements accordingly.

Whether the readjustments necessary to meet proposed new Army specifications raising the quality of gasoline above 100-octane would be justified in the light of existing conditions remains to be determined, he said. Inability to build plants on schedule, Ickes said, has been due to delays in getting priorities. "If we had been allowed the priorities which we were allowed, at the time they were specified, the program would be in much better shape than it is today," he explained.

Recommendations of PIWC for relaxation of the Eastern ban on pleasure driving met with little sympathy from the administrator, who declared his first interest was in making sure that people do not have to go cold next winter.

Instead of relaxation, he said, the ban should be extended over the entire country, with the exception of the producing states where there are available stocks that cannot be moved to the East.

Oil stocks in the East are still going down, he said, and railroad deliveries during the week ended January 30 were only 2000 barrels daily above the previous week. However, he added, the situation may show some improvement after the middle of the month, when the big-inch pipe line begins to make deliveries at Norris City.

Nelson Does Not Agree Car Confiscation Needed

Taking cognizance of public uncertainty regarding rubber and the seizure of privately-owned automobiles, WPB Chairman Donald M. Nelson on February 4 rejected Army suggestions that the government seize all spare tires and requisition 7,000,000 automobiles, and voiced assurance that enough synthetic rubber would be produced to avert any crises next fall, when supplies of natural rubber dwindle to the danger point.

While he expressed the belief that the government could take a lot more rubber out of civilian use without breaking down civilian economy, Nelson emphasized the problem is one of saving rubber and oil, not 7,000,000 private automobiles.

The chairman sought to clear up confusion as to the actual amount of synthetic rubber programmed from the year, variously estimated at between 46 and 55 percent, disclosing that the latter figure will be applied to the Buna S project and that by July plants capable of providing 435,000 tons of that type rubber should be in operation. He pointed out that this did not mean that the whole rubber schedule had been cut to 55 percent but, on the contrary, he said it "simply means that 55 percent of the plant capacity will be assured to completion and operation in the next several months." And "now that this part of our capacity is provided with certainty the remainder of the synthetic rubber program will go forward in proper balance with the other acute needs.

Nelson explained that rubber is one of five "must" programs, of which high-octane gasoline is another.

"We cannot permit any of these programs to lag behind essential requirements," he said, "and we are not permitting that to happen.

"The big production programs compete with one another for alloy steel, copper, aluminum, and for such finished equipment as valves, heat exchangers, and blowers. If we allow too much of any material to go, let us say, to the cargo-ship program, warship production may suffer; or if we concentrate too much on a certain type of equipment needed for rubber production, production of high-octane gasoline for our air force may bog down.

"Obviously that cannot be allowed to happen the problem has been to strike a balance between the conflicting problems so as to arrive at a balanced overall production schedule. The aim of such a schedule is not to show spectacular figures in any one field of production but to achieve a maximum benefit for the war effort as a whole."

What we have done with respect to rubber and the other major programs represents this board's considered judgment as to the means by which the needs of this nation's war effort can be best served, not any one economic section of the nation, but the nation as a whole.

"At the same time our policy is necessarily flexible. Production schedules may need to be changed at any time, to reflect changes in the availability of materials and equipment and the requirements of the various theaters of war."

Pleasure Driving Ban Saves 30,000 Barrels Daily

Approximately 30,000 barrels of gasoline daily are being saved as a result of the ban on pleasure driving, it was calculated this week by the OPA.

The relief given the fuel oil situation by the ban has convinced Administrator Prentiss M. Brown, who originally was skeptical, that it was a legal and the most logical move.

In the light of that conviction, it is doubtful whether OPA will be influenced by the PIWC recommendation for the lifting of the ban in April nor were there any indications that it would rescind last week's order cutting a second gallon of the value of heating-oil coupons in New England and New York, despite the criticism of the oil council. That cut, it is understood, was ordered over the protest of the PAW which believed that the situation then prevailing in the northeast could be cleared up within a few days.

In a move to ease a perplexing distribution condition, PAW has lifted the quota restrictions on withdrawals of fuel oils and kerosine from refinery and terminal supply points, believing that rations have been so synchronized with deliveries as to render the control unnecessary.

On a showing that West Virginia was producing more gasoline than it could consume or ship, OPA is restoring the value of the motorist ration coupons in that state to four gallons and lifting the ban on non-essential driving. Earlier in the week the fuel-oil restrictions were removed from that part of Florida west of the Apalachicola River.

In line with previous agreements between Ickes and Nelson WPB on February 5 transferred to Ickes the administration of the L-56 and L-70 orders, governing the distribution of fuel oil and motor fuel, respectively.

Illinois Spacing Order Extended to April 1

Extension of Petroleum Administration Order No. 2 (formerly WPB Conservation Order M-68-5), defining permissible spacing patterns for wells in Illinois and portions of Indiana and Kentucky, was announced February 3 by the PAW.

A new expiration date of April 1, 1943, was assigned the order.

OPA Reads from Tariff Commission Report: "Crude-Price Advance Not Justified Now"

Taking quick advantage of the report on crude-oil production costs submitted by the Tariff Commission, the Office of Price Administration announced February 1 that "a general advance in crude-oil prices for the nation's oil production is not justified at this time."

But, it was added, "OPA has maintained and will maintain a sympathetic and open-door policy to any and all petitions for price adjustments, especially where abnormal conditions have resulted in hardship and uneconomic operation at present price levels."

A general increase in price, it was held, would add heavily to the consumers' fuel bill and dangerously threaten price control, since oil is a basic commodity in the domestic, industrial and military economy.

The Tariff Commission report, it was stated, indicates that continuation of present crude prices, including the special price increases already granted in some fields and for various areas, will enable the majority of producers to absorb any increases in production costs and maintain a margin of profit which must be considered adequate in wartime.

"There will be exceptions, which is true at any time," OPA said. "But to raise all prices to relieve the exceptional producer would disrupt the entire price structure of the petorleum industry and would not be justified by any evidence which has been put forward to date."

"Door Not Closed"

OPA officials estimated that for each cent per barrel added to the price of crude, the nation's fuel bill would be increased $14,000,000 per year. Last year, they pointed out, 1,385,000,000 barrels of oil were produced.

They stressed that their attitude toward a general increase "does not mean that the door has been closed against consideration of local, regional or area price problems arising from abnormalities, undue hardship arising from oil shortages, and uneconomic price structures."

They maintained, however, that "if there is a sound case for an over-all increase in price of crude petroleum such a case has not yet been presented. On the other hand, the extensive studies and surveys which have been made and recently published for OPA by the Tariff Commission clearly indicate that both the price of a barrel of oil and the margin of realization above cost of production are greater than in most recent years.

"This condition was shown particularly for the third quarter of 1942, when prices, costs and margins were very near the level of October, 1941, prices at which ceiling prices were established for petroleum and petroleum products under the Emergency Price Control Act of 1942."

OPA contendent that increased supplies of oil cannot always be obtained by means of price increase, and to support that position referred to the situation now prevailing in the East, where higher prices could have no effect in alleviating the shortage due to lack of transportation facilities.

"Both industry and the consuming public are fully aware that the job of OPA is to keep the cost of living at sane levels by safeguarding the public interest through discouraging inflationary trends," it was asserted in a formal statement. "In some known oil pools where abnormally low prices prevail, higher prices may be necessary to cover the costs of new drilling, and the agency is willing to make adjustments where they will result directly in bringing more oil to market to meet specific needs. But, it is contended, neither the public, the government nor industry can be further burdened with staggering oil bills simply because some producers are not realizing all of the profits they might have once enjoyed."

Ceilings in 1941

The Tariff Commission report, it was declared, showed a steady increase in crude prices until ceilings were established at October, 1941, levels and, it was added, "if price control had not been put into effect it is contended that prices would have continued to rise above reasonable levels."

While the commission's report on its survey of conditions in the second quarter of 1942 "indicates" that some reductions in margins took place in returns to crude producers, OPA held that the excess of price over cost was "still satisfactory."

"Another reason which has been advanced for a general increase in crude-oil prices—as much as 50 cents a barrel has been proposed—is to save the wells which are capable of producing only a few barrels a day," the statement continued. "These stripper and marginal wells have been an important part of the oil industry since the first years of the industry's development.

"Such wells are of many types and classifications and no uniform condition exists. The majority of these small producing wells are not now operated at a loss, nor could they produce much more oil if the price was doubled. Such wells are located throughout the oil producing states and it may well be that in some fields, in some areas and for some grades of oil for which there is great demand, a local price adjustment would serve good purpose in stimulating their rehabilitation and continued operation. But in few instances has a documented case been submitted to OPA classifying such stripper and marginal wells within a locality, district or area.

"The problem of current exploration or findings cost has been before the interested federal agencies handling petroleum matters for some time. These costs must be separated from direct crude-production costs, and investigations are now in progress by the various agencies to develop a solution for the problem but OPA has indicated in the past that it cannot properly be solved by a nation-wide increase in price, which would impose extraordinary price increases upon the consumer."

Buttram Brands Report Incomplete

Announcement of OPA will not influence the Independent Petroleum Association to abandon its fight for higher prices, it was declared February 3 by Frank Buttram, president.

The price administration, it contended, based its position on an "inconclusive and incomplete" report by the Tariff Commission, in which no consideration was given to 30 percent of the production and 50 percent of the wells, as of the period covered, and ignored 85 percent of the producers.

As against the findings of the commission, Buttram suggested that OPA weigh statistics issued by the Treasury showing that of 5569 corporations engaged in production in 1942, 3022 had a deficit of $61,169,000, and pointed out that Congressional committees investigating the problem have not agreed with OPA's views, and the Interstate Oil Compact Commission and authorities of several states have held that prices are too low.

"Any careful consideration of the situation leads to the conclusion that government must decide whether it will create a definite shortage of petroleum or permit crude price to resume a normal base to which it was returning when price ceilings were imposed," he asserted. "The OPA itself has said that the petroleum industry was in a depressed condition at the time the ceilings were made effective."

Value Questioned

Value and significance of the Tariff Commission's report were questioned in a statement by Russell B. Brown, general counsel of the Independent Petroleum Association of America, who declared that the report did not cover present day conditions and furthermore that it did not take into consideration certain oil-producing costs, especially interest on investment, which heretofore have been generally recognized as part of the cost of producing oil. Brown said it was unfortunate that the commission did not make the report as an independent agency but in collaboration "with an interested group which was the Office of Price Administration, whose repeatedly avowed purpose has been to keep prices stationary."

"It is assumed," stated Brown, "that this (report) is the result of the survey announced by OPA in the latter part of 1941 as being made by the Tariff Commission in conjunction with OPA, to be used as a basis for determining proper price levels for crude petroleum throughout the United States.

". . . The first impression of the report indicates that while there are some 19,000 producers in the United States, they were able to obtain factual information from only 2534 producers, and that although there are only 2534 producers covered by this report, their total production amounts to 70 percent of the total production. This would indicate that the report covers companies of larger production. This is further emphasized by the fact that average daily production per well in the United States

is 9.4 barrels and the average production per well for companies covered by this report is 13.7 barrels per well. This report covers periods for the calendar year 1939, 1940, and for the first, second, and third quarters of 1941; therefore it is historical in nature. There is no effort in the report to cover the cost of finding new reserves or to cover the replacement cost for oil sold.

"Certain trends are indicated which show that for the 60 largest producers reporting, the operating costs of production for the period from the second quarter of 1941 to the second quarter of 1942 had increased 16½ percent.

"Crude oil prices were frozen as of October, 1941. The most comprehensive portion of the Tariff Commission's survey ends with the third quarter of 1941. In any calculation of today's costs, September 30, 1941, is not a fair place to end a survey, whether it be on farming, producing oil, or setting the family table.

"Other important items that heretofore have been included by the Tariff Commission in similar studies and that have been generally recognized as essential to cost studies have been left out of this report. One such item is interest. Heretofore, the studies have provided for the interest on capital. This study makes no such provision. Most oil producers borrow money from time to time.

"The Tariff Commission, created as an independent agency, has been recognized as a fair and impartial agency. It is unfortunate that it did not make this study as an independent group . . ."

Higher Rating Given Materials for Repairs

Higher preference ratings for materials for field operations are granted the oil industry under an amendment to Preference Rating Order P-98-b, issued by the War Production Board on the recommendation of PAW.

Ratings of AA-1 now are assigned for materials to be delivered to operators for use in maintenance and repair operation or for use in alterations, which formerly carried a rating of AA-X or lower.

The amendment also provides that in cases of actual breakdowns, an operator can expedite delivery of materials by obtaining the counter-signature of his district office, if the item to be purchased costs less than $500.

In all other instances, however, and including actual breakdowns where an item costing $500 or more is needed, an operator cannot apply the AA-1 rating until he has received approval from the WPB Director General for Operations, through applications to PAW.

A rating of AA-2X or lower may now be applied to items costing less than $50 for use in research laboratories without a countersignature from a district office or approval from the Washington offices of either PAW or WPB.

An operator requesting approval to apply various preference ratings no longer will be required to name the supplier or suppliers from whom he expects to obtain the material, but may make his purchases wherever he wishes, once the rating is granted.

Council Warns Prompt Stabilization Is Needed to Avert Shortage of Oil

Warning that prompt action must be taken to stabilize the oil industry if the United Nations are to avert the possibility of a petroleum shortage which might affect the outcome, and certainly the duration, of the war, Petroleum Industry War Council at its February meeting recommended an advance of 25 cents per barrel in the ceiling prices on crude oil.

The report was immediately taken under consideration by Administrator Harold L. Ickes, who said that, while he had an "open mind" on the whole question, no time would be lost in making representations to OPA if his study convinced him of the need for a general increase.

The question of crude costs was one of three major subjects taken up by the council, which also went into the question of reserves as shown by discoveries last year and prospects for wildcatting in 1943 and again reviewed the East Coast situation.

All of the council's discussions were colored by the price problem, the economic committee's report on the Eastern situation developing that refiners in other districts have lagged in the adjustment of yields to produce more war products because of the financial problem, while prospecting operations for more than a year have been controlled to considerable extent by the price situation.

The East Coast situation now is in balance, to the extent that the deficiency in deliveries through the remainder of the winter can be met by withdrawals from stocks which, however, will be in a precarious position if the cold weather is unduly prolonged, the council was told in the monthly report of its committee on petroleum economics.

Through the prohibition on gasoline deliveries by tank car, the ban on pleasure driving and the cut in the value of heating-oil coupons, the daily deficiency of 200,000 barrels for the current quarter has been reduced to 72,000 barrels.

However, the actual experience may be even better, since the committee, in estimating receipts for the remainder of the quarter, did not give credit to the promise of J. J. Pelley, president of the Association of American Railroads, to increase rail movement to 900,000 barrels daily by the end of this month.

Commending the government for the restrictions it has imposed on the use of gasoline and oil, the committee noted that the same appreciation could not be expressed of the most recent cut of 11 percent in the value of fuel-oil coupons in New England and New York which, it said, is "unnecessary and inequitable to the consumers" in those areas.

The committee, next month, will submit a report covering the coming summer and next winter, at which time it will recommend the action to be taken to build up stocks so that the industry may go into the 1943-44 heating season with adequate supplies.

The report, however, carried one recommendation in advance of the close of the heating season—that the ban on pleasure driving be relaxed as quickly and as fully as possible.

Commenting on the steps taken to relieve the situation, the committee cautioned that "it should be borne in mind that, while the figures indicate that restricted demands can just barely be met when drawing stocks to critical minimums, this can only be achieved if the anticipated reductions in consumption and increases in supplies are realized and continued, at least through the first half of March.

"In any case," it said, "stocks over the remainder of the first quarter of this year will be at critically low levels, which means that, for the next six weeks, there will be no appreciable relief from the serious distribution difficulties now being experienced. Clearly every effort should be made to increase supplies above those forecast in order to relieve the situation."

To this end, it was declared, the transportation facilities released by restrictions on gasoline must be used for bringing in increased supplies of other products, and the prohibition on tank-car shipments of motor gasoline into District 1 should be continued through February and possibly March and, in addition, production of gasoline within the district should be kept to a minimum.

Particularly essential, it was pointed out, is an increased production of kerosine and fuel oil by refineries in the district and, if additional tanker capacity can possibly be made available, additional deliveries by water.

"By the latter part of March," the committee forecast, "the situation should tend to become easier, but will be controlled by the severity of the winter and the extent of military demands upon District 1. Preliminary figures on supply and demand for the second quarter indicate that substantial additional supplies will be available for military requirements and the necessary rebuilding of stock levels, even though the severe restrictions on passenger-car use be relaxed within the limits of the unit values for passenger-car gasoline coupons. The extent of relaxation permissible on consumption restrictions will therefore be determined largely by the extent of military demand to be supplied during this period, on which information is not now available."

Want Line All the Way

The committee endorsed the construction of the 20-inch products line approved last month by the War Production Board, but urged that it be carried to the coast without delay, declaring that if this is done before the end of the year "the whole situation will be much easier."

A survey indicated that the ban on pleasure driving has saved 36,000 barrels of gasoline daily and the fuel-oil restrictions have reduced consumption by 59,000 barrels.

In a study of the situation throughout the country as a whole, the committee

expressed grave concern over conditions in Districts 1, 2 and 3, where operations are so out of balance that changes must be made at once.

"Characteristic of the situation in these three districts is the pronounced lack of residual fuel oil in relation to demand, with a tendency towards overproduction of light products, particularly gasoline," it declared. "This is especially noticeable in District 2 where, over the seven-week period December 5 to January 23, gasoline stocks have increased at the rate of approximately 130,000 barrels daily, and on January 23 were about 4,500,000 barrels greater than previously forecast as required for that date. Had yields been adjusted as previously recommended by this committee, the accumulation of gasoline could have been prevented, and badly needed crude oil or fuel oils would have been made available for shipment to District 1. As a result, East Coast supplies could have been increased by approximately one third of this excess gasoline accumulation, or by about 1,500,000 barrels, equivalent to about 30,000 barrels daily over the seven-weeks period, by virtue of supplies having been provided at nearer points than District 3 for tank-car movement to District 1."

Pointing out that in the past the committee has emphasized the importance of reducing gasoline yields in advance, to make available adequate fuel-oil supplies and prevent unnecessary gasoline-stock accumulations, the report charged flatly that the failure in general to adopt these recommendations has been partly responsible for the imposition of the ban on tank-car shipment of gasoline into District 1.

Price Adjustments

"Increasing residual fuel oil yields at the expense of gasoline obviously reduces refinery income," it was admitted. "The main deterrent to the making of the required yield changes has been the failure to provide the necessary price adjustments. The recent adjustments by OPA of residual-fuel-oil price ceilings on an API-gravity-premium basis in certain areas is a step in the right direction, but conditions in other areas will have to be taken into account if the overall situation is to be adequately corrected.

"The committee wishes to reiterate its view, embodied in its suggestion to the council in October, 1942, that the gravity-premium method is an effective incentive means for individual compensation for increased fuel-oil production, and feels that it should be further utilized in other areas than those designated by OPA in order to stimulate increased fuel-oil production where needed. However, to avoid inequities among customers, some arrangement should be made for a uniform average price to them, with reallocation of part of this price to suppliers, dependent upon the gravity supplied.

"The other noteworthy lack of balance occurring in the three districts is the maladjustment of refinery runs and yields as among the districts which is resulting in interference with the maximum output of essential war products. This situation is reflected in current failure to attain the maximum output of war products in Districts 1 and 3. In District 1 this is due to insufficient crude supplies, while in District 3 it is due to lack of transportation for non-war products and the filling up of storage facilities."

However, it was disclosed, this matter is being studied by PAW with representatives of the refinery committees of the three districts, and is considering, among other things, the reduction of refinery runs in District 2, with a resulting shift from product to crude shipments to District 1, providing additional product outlet to refineries in Districts 1 and 3.

But, the committee warned, "prompt action on this or other adequate alternatives is necessary if further loss in the output of essential war products is to be avoided."

PIWC Report on Prices

Raising of the present price ceiling on crude oil by 25 cents a barrel was urged in a lengthy report by the committee on cost and price adjustment, approved by the council in the only resolution adopted at the meeting.

Emphasizing the great importance of oil both in the field of war and to civil life, the committee warned that "the question of a continuous assured supply of petroleum products becomes of first importance, not only to the petroleum industry itself, but as well to every division of government responsible for or concerned with winning this war."

The report assailed not only OPA's refusal of a general increase in price, predicated, it charged, on an "historial" Tariff Commission report "based on costs now obsolete," but also "the recurring threat by governmental agencies to disturb the present depletion allowance and regulations for expensing intangible development costs," which it characterized as "the most disturbing element presently confronting the industry."

"The industry owes a duty to itself as well as those concerned with its welfare to make clear its requirements in order that it may not fail to meet such demands as may properly be made upon it," the committee said in explanation of the size of its report, well in excess of 100 pages.

The effect of the present ceiling, it was declared, "has been to prevent the operation of normal activities with relation to the economics of this industry."

Cannot Afford Oil Shortage

"The nation cannot afford through a shortage of petroleum and its products to cause the unnecessary prolonging of the present war," the report said. "The effect on the economy of extending the present war for only a matter of two or three days would be far greater than any proposed or suggested increase in the cost of assuring a supply of petroleum necessary to hasten the early and successful conclusion of such war. This is only the economic effect. The question of lives involved, whether it be one or many, is too important to be subject to economic treatment.

"It is the considered judgment of the petroleum industry that the United States faces a very serious shortage of petroleum available for wartime use within the near future."

Depleting Reserves

The committee admitted that the present supply of oil is large and has met every demand that has been made for war and essential civilian activities, but pointed out that oil is now being used from present reserves at a rate far in excess of that of discovery of new reserves from which to produce future requirements, and the production rate cannot be greatly increased without menacing the reserves on which future supply depends.

"To increase even temporarily the rate of production from the present sources far beyond the efficient rate of production would endanger the supply to such an extent as to make such action inadvisable," it commented.

"To reduce consumption through further reduction of civilian use would upset the present war activities to such an extent that war production would be retarded."

Through long experience with the threat of impending shortage of reserves, it said, certain conditions have been demonstrated to be effective in encouraging the action necessary to insure a continuous supply of oil through the discovery of additional reserves.

"Given the materials with which to carry on the activities and the experienced men available intelligently to search for, find and produce the oil, the industry through the operation of the normal economy of proper price can immediately institute a widespread exploratory campaign that should result in rebuilding the reserves sufficient to meet such requirements as may be demanded of it," the committee declared.

"The present crude - price ceilings were established at levels which have proven inadequate to stimulate sufficient new discoveries. The failure to increase these price ceilings denies to the industry that one proven method by which the industry has always been able to stimulate the finding of new reserves. On a comparative basis crude-oil prices are below that of any other basic commodity."

Should Increase Exploration

The fact that exploratory drilling activities over the past four years have not discovered the amount of new oil that usually results from such operations establishes the fact that the finding of new oil is becoming more difficult and expensive, it was pointed out.

"It is now recognized within the industry that it should increase greatly its exploratory effort," the report continued. "Such increased activitiy under more difficult and expensive operating conditions will result in a higher cost of finding and developing oil from new fields. To encourage this additional work the industry must have a higher price for its product. If it does not obtain for the oil now sold an amount sufficient to replace in quantity the oil produced and

sold, the industry will impair its capacity to meet future requirements."

The Tariff Commission report, it was declared, "makes no effort to furnish an answer to the most important question now confronting us, namely, the cost of finding new oil," and furnishes no "valid foundation" for fixing or continuing present price ceilings.

"As a step to stimulate greater activity leading to the discovery and development of an additional supply of crude petroleum, to prevent premature abandonment of wells and to encourage secondary recovery activities, it is recommended that all present price ceilings on crude petroleum be raised immediately 25 cents a barrel so that crude prices can be increased throughout the industry," the committee concluded.

"What it will cost to find and to produce new oil necessary to maintain an adequate production rate is not known. It can be determined only by experience.

"The proper price necessary to insure the discovery of new oil is not capable of exact mathematical calculation. The experience of a successful industry must be applied to the existing difficult discovery problem.

"A continuous study should be made by the industry to support such additional increases in the price ceilings as may be necessary from time to time.

"The freezing of crude price ceilings for more than a year has resulted in an unusual and undesirable price rigidity during a period of many changes. The increase in price ceilings should allow for the free interplay of the usual supply-and-demand factors.

"In closing this report, we desire to point out that any increase in crude-oil price ceilings and crude-oil prices must be accompanied by appropriate increases in product price ceilings and product prices."

In a series of appendices in support of the report, the committee showed that all of the efficient producing capacity from presently known fields will be needed by the end of this year to take care of anticipated minimum demands and that additional discoveries must be made, not only to provide the necessary factor of safety, but to provide for the actual minimum demands in 1944 and 1945.

Other Needs

The committee warned that while a proper price for oil is the basic factor in accelerating discovery, it can be made fully effective only by the maintenance of the existing depletion allowance and the right to expense intangible development costs and the continuance of Internal Revenue Bureau regulations which provide for the current writing off of geological and geophysical exploratory expenses; and by maintaining sufficient manpower, making available to producers the necessary materials for the search for oil, the drilling of new wells and the rehabilitation and maintenance of producing wells, and by removing restrictions on oil - field - transportation facilities and personnel.

PIWC Report on Reserves

New discoveries which may ultimately reach a maximum of possibly 800,000,000 barrels were made in 1942, the council was informed in a report by W. B. Heroy, PAW Director of Reserves, but even if that figure is reached only about 58 percent of the oil produced during the year will have been replaced.

The proven reserves of 335 new oil fields and horizons discovered in 1942 which were developed during that year are estimated at 178,420,960 barrels, while the estimated proven but undeveloped reserves in those fields and horizons, 241,147,652 barrels, give a total of proved reserves of 421,128,052 barrels, Heroy declared, but the possible maximum is placed at 800,858,629 barrels.

"The number of new fields found in 1942 is reported as 261, in comparison with 342 found in 1941," his report stated. "The proven oil reserves of these fields averaged 1,600,000 barrels per field and the possible maximum reserve was only about 3,000,000 barrels per field.

"The total crude-oil production of the United States for 1942 (one month estimated) was about 1,385,000,000 barrels, so that proven new discoveries were about 30 percent of the total production. If these new fields and new horizons should ultimately reach the estimated possible maximum they would still represent only about 58 percent of the amount produced."

Heroy explained that the "possible maximum" reserves represent an estimate which attempts to give an idea as to how much oil the 1942 discoveries may ultimately produce when fully developed, based largely on geological information as to the extent of the ge-

Petroleum Reserves of the United States — New Discoveries, 1942

(Preliminary Estimate)

Figures Compiled by the Petroleum Administration for War

	NEW FIELDS DISCOVERED					NEW HORIZONS DISCOVERED					TOTAL DISCOVERIES				
		Estimated Ultimate Production					Estimated Ultimate Production					Estimated Ultimate Production			
District and State	No.	Proved Producing	Proved Undrilled	Total Proved	Possible Maximum	No.	Proved Producing	Proved Undrilled	Total Proved	Possible Maximum	No.	Proved Producing	Proved Undrilled	Total Proved	Possible Maximum
District I															
New York															
Pennsylvania															
West Virginia															
District II															
Illinois	42	12,174,250	5,640,250	17,814,500	22,815,000	7	2,860,000	1,810,000	4,670,000	6,020,000	49	15,034,250	7,450,250	22,484,500	28,835,000
Indiana	11	199,800	84,000	283,800	603,300	6	769,000	185,000	954,000	1,624,000	17	968,800	269,000	1,237,800	2,227,300
Kansas	31	10,478,805	32,550,000	43,028,805	73,333,805	6	4,115,000	1,940,000	6,055,000	7,055,000	37	14,593,805	34,490,000	49,083,805	80,388,805
Kentucky (West)	5	1,440,500	1,118,000	2,558,500	3,144,000						5	1,440,500	1,118,000	2,558,500	5,144,000
Michigan	15	3,477,800	2,512,900	5,990,700	11,833,000	3	107,500	380,000	487,500	1,485,000	18	3,585,300	2,892,900	6,478,200	13,318,000
Missouri															
Nebraska															
Ohio	1	78,000	312,000	390,000	1,425,000						1	78,000	312,000	390,000	1,425,000
Oklahoma	29	36,371,825	18,648,182	55,020,007	102,867,244	1	248,480		248,480	5,248,480	30	36,620,305	18,648,182	55,268,487	108,115,724
Total Dist. II	134	64,220,980	60,865,332	125,086,312	218,021,349	23	8,099,980	4,315,000	12,414,980	21,432,480	157	72,320,960	65,180,332	137,501,292	239,453,829
District III															
Arkansas	5	20,600,000	5,360,000	25,960,000	27,620,000						5	20,600,000	5,360,000	25,960,000	27,620,000
Louisiana	11	5,426,000	8,780,000	14,206,000	28,806,000	24	10,852,000	33,211,000	44,063,000	54,763,000	35	16,278,000	41,991,000	58,269,000	83,569,000
Mississippi															
New Mexico	5	880,000	2,310,000	3,190,000	6,040,000						5	880,000	2,310,000	3,190,000	6,040,000
Texas	99	49,861,000	92,896,000	142,757,000	223,447,000	19	7,316,000	18,992,000	26,308,000	59,208,000	118	57,177,000	111,888,000	169,065,000	282,655,000
Total Dist. III	120	76,767,000	109,346,000	186,113,000	285,913,000	43	18,168,000	52,203,000	70,371,000	113,971,000	163	94,935,000	161,549,000	256,484,000	399,884,000
District IV															
Colorado															
Montana	1	80,000		80,000	4,200,000						1	80,000		80,000	4,200,000
Wyoming	1					2	1,479,440	318,320	1,797,760	13,860,800	3	1,479,440	318,320	1,797,760	13,860,800
Utah															
Total Dist. IV	2	80,000		80,000	4,200,000	2	1,479,440	318,320	1,797,760	13,860,800	4	1,559,440	318,320	1,877,760	18,060,800
District V															
California	5	3,630,000	2,203,000	5,830,000	8,610,000	6	7,535,000	11,900,000	19,435,000	134,850,000	11	11,165,000	14,100,000	25,265,000	143,460,000
Grand Total—U.S.	261	144,697,980	172,411,332	317,109,312	516,744,349	74	35,282,420	68,736,320	104,018,740	284,114,280	335	178,420,960	241,147,652	421,128,052	800,858,629

ological structures in which the discoveries were made.

Studying Costs

His report showed that the division of reserves is engaged in the preparation of an estimate by states of proven reserves, which will be completed about March 15; and is preparing estimates of materials required for exploration, including the requirements of geophysical crews, and is also working on information indicating the current volume of prospecting work and is studying the cost of exploration in the petroleum industry from the inception of search to the completion of a discovery well.

The report was one of several considered at a preliminary session of the PIWC production committee February 1, at which Don R. Knowlton, PAW Director of Production, forecast that only 16,000 wells would be drilled this year.

This, it was pointed out, would be slightly less than half the 32,300 wells drilled in 1941 and about 25 percent less than the 20,296 drilled last year.

"You will note that the production committees have estimated that a total of 20,846 wells will be drilled during the year," Knowlton said. "This is a substantial increase over the 16,000 wells which the production division estimated would be drilled. The production division's estimate was made on the basis of an estimated required daily average production of 3,800,000 barrels over the year. Parenthetically, it is interesting to recall that only a month ago we heard assertions that there was not sufficient undeveloped area to justify the drilling of 16,000 wells.

"In view of the probable higher requirements for petroleum, and in view of the higher number of wells estimated by the production committees, the production division will reappraise the situation. We have already submitted to the War Production Board a request for steel to drill the 16,000 wells, and if our re-analysis warrants it, we will make a supplementary request to the War Production Board for an additional allotment of steel."

While development drilling may be further curtailed, if the division's estimate is closer than that of the committees, there will be an increase in exploratory drilling, it was shown in Heroy's report.

Heroy disclosed that a check of operations planned for 1943 is being made among a limited number of operators, and replies thus far received indicate that the number of wildcat wells which they will drill will be about 20 percent greater than the number drilled in 1942, the limiting factors being the ability of the companies to complete lease and title work, and the availability of drilling crews.

"Preliminary figures indicate that 3045 exploratory wells, drilled in search for oil and gas, were completed in 1942, in comparison with 3264 in 1941, a decrease of nearly 7 percent," he said. "There was a much greater decrease in the number of oil fields discovered, 261 in 1942 as compared with 342 in 1941, a decrease of about 24 percent."

In the production division's report, total completions for 1942 were set at 17,872, against 29,574 for 1941, or a drop of 39.6 percent.

The report disclosed that increasing difficulty is being encountered in securing alloy steel for sucker rods, and negotiations have been entered into with WPB looking to the development of a plan under which the industry might return its scrap alloy steel to the mills and secure an appropriate allocation of finished alloy steel in exchange.

A review of operations of the production branch of the industry in 1942, by the PIWC committee, gave the number of dry holes at 5512, or 31 percent of completions, against 7025, or 24 percent, in 1941.

Crude-oil stocks at the close of the year (after deducting for heavy California crude) were placed at about 234,000,000 barrels, a drop of 13,000,000 during the year.

In wildcat operations, 2536, or 83.8 percent of the 3029 wildcat wells drilled, were completed as dry holes, and only 493, or 16.2 percent, came in as producers, as compared with 2761 dry holes in 1941 which represented 84.6 percent of the completions.

British Oil Mission Conferring in Washington

A British mission was in Washington this week at the invitation of the United States government, for consultation with the various agencies and other British missions concerned with oil and tanker questions.

Arrival of the mission was announced by Administrator Harold L. Ickes, who said it was headed by Geoffrey Lloyd, M. P., chairman of the British Oil Control Board and Petroleum Secretary, accompanied by F. C. Starling, director of petroleum supplies; T. H. Humphreys, director of the tanker division of the Ministry of War Transport, and Sir Frederick Godber, member of the trade control committee.

Baton Rouge Butadiene Plant Begins Operations

The first of the butadiene plants which is to produce raw material from petroleum for the government's synthetic rubber program began operations January 29 at Baton Rouge Louisiana, the Standard Oil Company (New Jersey) announced. The plant has a capacity of 6600 to 9000 tons of butadiene per year depending upon the quality of the petroleum fractions used as feed stock. This is enough butadiene to produce rubber for 1,300,000 to 2,000,000 tires. It is the largest plant yet put in operation for making synthetic rubber raw materials.

The plant was planned and financed by Standard Oil Company of Louisiana which intended to use the butadiene to increase its own production of special types of synthetic rubber which were in commercial demand even before the war. The company had originally scheduled completion of the plant for October 1, 1942, and the delay has been due to increasing shortages of critical construction materials since the outbreak of the war. Just before Pearl Harbor the Rubber Reserve Company contracted for the entire output of this plant, in order to speed up the government's synthetic rubber program.

The butadiene, normally a gas, is shipped in pressure tank cars as a liquid to the rubber plants where it will be combined with styrene in the proportion of about three parts of butadiene with one part of styrene to form Buna-S.

Three additional butadiene units at Baton Rouge which are being wholly or partly financed by the government are well along toward completion, and will be coming into production successively during the next three months.

Oil Scouts Authorize Yearbook Publication

Directors of the National Oil Scouts and Landmen's Association authorized the publication of their popular yearbook for 1942 on oil and gas activities in all producing states at the annual meeting held in Dallas February 4. The book has won recognition for its completeness, and will serve as one of the association's contributions to the war effort.

The Dallas meeting was streamlined to a single business session due to the membership having assumed duties of those on active military duty.

Dell J. Crosby, chief scout for Humble Oil & Refining Company, Houston will serve as president of the association during its twenty-first year. He succeeds J. W. Selby, chief scout of the Houston division of Shell Oil Company, who presided along with other officers the past two years since the annual meeting was not held in 1942. S. M. Stinson, Humble Oil & Refining Company, Midland, Texas, and E. V. S. Lowere, Pure Oil Company, Oklahoma City, were chosen first and second vice presidents, respectively, while Wesley Weed, Sun Oil Company, Alice, Texas, is secretary-treasurer. H. L. Johns, Freeport Sulphur Company, New Orleans, will be editor in chief of the yearbook. Selby automatically becomes chairman of the board of directors.

DELL J. CROSBY

More Active Agitation for Price Increases Only Change in General Market Situation

Markets continue featured by shortages, inadequate transportation and complaints against too-low ceiling prices, as the Office of Price Administration firmly maintains its stand against increases.

While OPA made upward revisions of crude prices January 28 in several fields of Arkansas, Louisiana, Kentucky, and Texas, those revisions were strictly local and intended to remove inequalities, as former ceiling prices in the fields were subnormal in relation to similar crudes in adjacent fields.

Concurrently with the authorization of those increases, the price agency issued a statement explaining that it was pursuing a policy of making any necessary adjustments in particular fields to reflect true market conditions, rather than special contract situations, as of October, 1941, the base period for oil-price ceilings.

With regard to crude prices in general, OPA asserted on February 1 that a general increase was "not justified at this time." The statement was based on the recently issued report of the U. S. Tariff Commission on costs of producing crude petroleum. However, from within the industry there was prompt declaration that the Tariff Commission's report was not fully representative of the industry and failed to include data on thousands of stripper wells, while it was asserted also that the data were historical in nature instead of throwing light on present producing costs. The Independent Petroleum Association of America made such criticism of the OPA-Tariff Commission data. Later in the week the Petroleum Industry War Council issued a report which did not specifically deal with crude prices or embody any recommendation or resolution, but which lent strong support to agitation for higher crude prices, in showing that discoveries of new reserves lagged seriously in 1942, resulting in reduction of the nation's available underground supply.

Meanwhile, California producers continued their united fight for increases in prices of crude and of refined products other than gasoline, practically all producer associations of the state having adopted resolutions or otherwise having gone on record as feeling strongly that price revisions were needed to avoid serious shortage of oils on the West Coast.

In the East Coast district there has been no relief from the serious shortages of all petroleum products, and despite the drastic restrictions on use of gasoline and fuel oils, suppliers continue faced with difficulties in equitably distributing among consumers the limited materials available. However, some gradual improvement is anticipated, under the efforts to provide double relief, in the form of increased deliveries and drastically curbed consumption. There is considerable disappointment over tardiness in putting into service the 24-inch pipe line from Texas to Illinois, but filling of the line proceeds, and when it goes into regular operation, the line will provide a net increase of about 120,000 barrels in receipts of crude and fuel oils in the East.

On the Gulf Coast there is still pressure of excessive stocks, accumulated because of inability to obtain transportation, and some refineries continue shut down, although plants are endeavoring to go ahead with maximum possible production of aviation gasoline, as desired by the government.

The Middle West continues confronted with scarcities of products and transportation, being obliged to make very heavy use of tank trucks in order to keep railway tank cars moving into the East Coast district. Especially scarce in the district are the fuel oils.

In the upper Mid-Continent, there is

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	*State Allowable of Crude Production	PRODUCTION IN WEEK ENDED Jan. 30	Feb. 6
Arkansas	72,671	75,100	74,950
California	780,200	765,500	753,000
Long Beach		33,200	33,300
Midway-Sunset		54,800	55,400
Kettleman Hills		41,800	42,350
Wilmington		94,900	94,100
Rest of State		540,800	527,850
Colorado		6,100	6,280
Illinois		228,600	239,350
Salem		30,350	32,050
Louden		37,100	40,150
Other New Pools		149,400	155,550
Old Pools		11,750	11,600
Indiana		14,400	15,950
Kansas	305,500	291,800	305,700
Kentucky		11,550	11,850
Louisiana	328,357	338,250	338,650
North		90,600	91,750
South		247,650	246,900
Michigan	57,800	60,050	60,750
Mississippi		56,200	53,800
Missouri		100	95
Montana		15,000	20,250
Nebraska		2,650	2,450
New Mexico	100,000	98,400	98,350
New York		13,250	14,800
Ohio		10,950	10,550
Oklahoma	365,300	347,750	349,500
Oklahoma City		60,200	59,700
Seminole Area		78,050	79,400
Rest of State		209,500	210,400
Pennsylvania		46,500	48,050
Tennessee		30	35
Texas	1,336,161	1,331,850	1,338,950
Upper Gulf Coast		309,000	319,850
East Texas Field		327,850	325,700
Rest of Eastern Texas		101,650	100,300
Lower Gulf Coast		100,400	100,600
Southwest Texas		48,900	49,250
South Central Texas		17,350	17,450
West Texas		201,300	201,150
North Texas		136,850	135,600
Panhandle		88,550	89,050
Utah		15	15
West Virginia		8,750	9,200
Wyoming		92,250	93,000
Total 8 Prorated States	3,345,989	3,308,700	3,319,850
Total United States		3,814,345	3,845,445

* Details on state allowables found in this issue of The Oil Weekly.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

ITEM	Crude Oil Prod. Bbls. Day (Add 000)	Week Ended	Runs to Stills Bbls. Day (Add 000)	Week Ended	Crude Stocks Bbls. (Add 000)	Week Ended	Gasoline Stocks Bbls. (Add 000)	Week Ended	Gas Oil & Distillate Stocks Bbls. (Add 000)	Week Ended	Residual Fuel Oil Stocks Bbls. (Add 000)	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]107,229	3-14	49,861	11-14	95,857	1- 3
1943	3,871	1- 2	3,734	1- 2	233,938	1- 2	88,830	1-30	42,913	1- 2	72,881	1- 2
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,615	1-23	232,191	1- 9	82,420	1- 2	37,057	1-30	70,763	1-30
Trends in 1942 (Week Ended):												
Jan. 3	4,038	.....	3,961	.....	244,440	.....	92,987	.....	49,357	.....	95,857	.....
Jan. 31	3,871	.....	3,848	.....	250,740	.....	97,810	.....	40,674	.....	91,189	.....
Feb. 28	4,016	.....	3,675	.....	259,373	.....	105,635	.....	34,547	.....	88,285	.....
Mar. 28	3,820	.....	3,667	.....	263,208	.....	105,624	.....	31,756	.....	83,045	.....
April 25	3,581	.....	3,506	.....	257,073	.....	102,897	.....	29,240	.....	81,107	.....
May 30	3,877	.....	3,522	.....	255,023	.....	95,355	.....	31,384	.....	79,628	.....
June 27	3,719	.....	3,581	.....	253,364	.....	88,396	.....	32,851	.....	77,304	.....
July 25	3,691	.....	3,658	.....	249,262	.....	82,281	.....	35,966	.....	77,816	.....
August 29	3,964	.....	3,697	.....	249,007	.....	80,831	.....	42,060	.....	78,034	.....
September 26	3,909	.....	3,802	.....	242,785	.....	80,550	.....	45,945	.....	78,943	.....
October 31	3,901	.....	3,731	.....	239,266	.....	79,159	.....	48,131	.....	79,166	.....
November 28	3,878	.....	3,736	.....	234,850	.....	78,854	.....	49,739	.....	77,796	.....
January 2	3,871	.....	3,734	.....	233,938	.....	82,420	.....	42,913	.....	72,881	.....
January 9	3,821	.....	3,674	.....	232,191	.....	84,245	.....	41,367	.....	72,559	.....
January 16	3,850	.....	3,640	.....	[2]2,647	.....	84,955	.....	39,841	.....	71,517	.....
January 23	3,849	.....	3,615	.....	233,733	.....	87,102	.....	38,034	.....	71,216	.....
January 30, 1943	**3,826**	.....	**3,698**	.....		.....	**88,830**	.....	**37,057**	.....	**70,763**	.....
January 31, 1942	3,871	.....	3,842	.....	[4]247,764	.....	100,864	.....	41,012	.....	89,822	.....
Change:												
In week	—23	.....	+83	.....	+1,086	.....	+1,728	.....	—977	.....	—453	.....
In year	—45	.....	—144	.....	—14,031	.....	—12,034	.....	—3,955	.....	—19,059	.....
In year	—1.1%	.....	—3.7%	.....	—5.6%	.....	—11.9%	.....	—9.6%	.....	—21.2%	.....

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States [4] Stocks, January 24, 1942.

continued demand for both light and heavy fuel oils in excess of supply, although OPA's recent adjustment of ceiling prices on industrial fuel is reported to be bringing some increase in the production of that urgently needed product. The government's action banning tank-car shipments of gasoline from this district to the East Coast is causing some backing up of gasoline in storage, but tanks generally are fairly well depleted, and no serious surplus is expected to accumulate any time soon.

Western Pennsylvania refiners are finding strong demand for most products. Even the neutral oils, which heretofore have been weak, now demonstrate some firmness, while supplies of bright stocks, cylinder stocks, and light fuel oils are tightly held. A factor in present scarcities is the fact that crude production currently is seasonally low.

Five Texas Coast Fields Get Allowable Increases

The Texas Railroad Commission last week increased the allowables for five Gulf Coast fields to supply oil to be delivered into the new Plantation Pipe Line system. The increase of 10,150 barrels daily was requested by Humble Oil & Refining Company at the last statewide hearing.

E. L. DeGolyer, of the Office of Petroleum Administrator for War, telephoned the commission and advised it that the oil was necessary and that the federal recommendation to Texas for February would be increased by the amount needed.

The Anahuac fiel dwas raised from 11,175 to 24,284 barrels daily. Pierce Junction was raised from 2630 to 4210 barrels daily. Red Fish Reef was raised from 1237 to 1882 barrels daily. Cedar Point was raised from 1088 to 1501 barrels daily. Fishers Reef was increased from 102 to 202 barrels daily. These allowances, however, are subject to the general shutdown order, and will be produced only 18 days during February.

The commission also raised the allowable for the Stowell field from 1422 to 2034 barrels per day.

East Texas Allowable Transfer Hearing Set

The Texas Railroad Commission has scheduled a hearing for February 17, to consider revision of its allowable transfer order in the East Texas field. This is the order which was entered February 20, 1942.

The order provides that a well may be tested, and if it makes more than 100 barrels of water, its allowable may be transferred to another well on the same lease, providing the water well is shut in. The order also calls for tests every six months to determine whether the water well can continue to make its allowable.

Sun Oil Company has requested the hearing to determine whether the testing at six-month intervals should be eliminated, and to request "freezing" of the allowables of the water wells.

California Fuel Price

Maximum ceiling prices for Pacific Standard No. 300 and No. 400 fuel oil have been set by Jack N. Westsmith, OPA petroleum price specialist, at 95 and 85 cents a barrel respectively in Los Angeles area, and at $1 and 90 cents respectively in San Francisco area.

Draft on Fuel-Oil Stocks Continues Despite Increased Plant Through-put

Although daily average crude runs to stills were increased by 83,000 barrels in the week ended January 30, the output of the refineries was not sufficient to prevent continued substantial draft on the nation's greatly depleted stocks of both light- and heavy-fuel oils. This was accounted for partly, however, by continued relatively large refinery yields of gasoline, instead of the full shifting of yields toward production of the fuel oils in essential volumes. This was indicated by the accumulation during the week of 1,728,000 barrels of finished and unfinished gasoline in storage, an increase not far from normal but probably larger than justified under present conditions of substantially curtailed demand for motor fuel.

Crude runs to stills for the nation averaged 3,698,000 barrels daily in the week ended January 30, up from 3,615,000 the week before but 144,000 under the average of the corresponding week last year, a decrease of 3.7 percent, which was probably about in line with the decrease from a year ago in the demand for petroleum. At the rate of 3,698,000 barrels per day, the refineries were utilizing 77 percent of their rated capacity. By refining districts, the use of capacity was as follows: East Coast-Southwest regions 68 percent, Appalachian 88 percent, Indiana-Illinois-Kentucky 91 percent, Oklahoma-Kansas-Missouri 85 percent, Rocky Mountain 67 percent, and California 84 percent.

Partially responsible for the 977,000-barrel withdrawal of gas oil and distillate fuel from storage was a decrease of 118,000 barrels in production of that product as compared with the previous week. The week's 977,000-barrel reduction of stocks, lowering inventory to 37,057,000 barrels, was accounted for about 50 percent by the East Coast and Southwest districts, 200,000 each by California and the Middle West and 36,000 barrels by Oklahoma-Kansas-Missouri, while Rocky Mountain and Appalachian districts added to storage.

The withdrawal of 453,000 barrels of residual fuel oil from storage was made in the face of an increase of 136,000 barrels in the weekly output of that product at the refineries. The reduction reflected drafts of 368,000 barrels in the East Coast-Southwestern districts, 95,000 in California, 19,000 in Oklahoma-Kansas, 10,000 in the Rocky Mountain area, and on the other hand additions to stocks in the amount of 33,000 barrels in the Appalachian region and 6000 in the Middle West. The 95,000-barrel withdrawal from California stocks occurred despite stepping up of refinery output by 225,000 barrels over the previous week's production. Similarly, withdrawals in the East Coast-Southwest and Mid-Continent districts were made in the face of increased production. United States stocks of residual fuel oil totaled only 70,763,000 barrels on January 30, down 19,000,000 barrels or 21 percent from the 89,822,000 barrels as of January 31, 1942.

The nation's inventory of finished and unfinished gasoline totaled 88,830,000 barrels on January 30, having increased from 87,102,000 barrels within a week. The new total was, however, 12,034,000 barrels, or 12 percent, under that of 100,864,000 reported for January 31, 1942. All major refining districts added to storage, although production was lower than in the previous week in the Middle West, Rocky Mountain, and West Coast regions. Production was greater than in the preceding week, however, in the East Coast-Southwest, Appalachian, and upper Mid-Continent districts.

February Demand for Crude Oil Above January and Same Month Year Ago

Despite the ban on pleasure driving in the East and restrictions on fuel-oil consumption in 32 states, February demand for domestic crude oil will be 149,600 barrels a day higher than the actual for the same month last year, it was forecast February 2 by the Bureau of Mines.

The bureau placed February demand at 3,914,300 barrels daily, compared with 3,912,900 barrels for January and 3,764,700 barrels a year ago. Daily production during the five weeks from December 5 to January 9 averaged 3,869,000 barrels, while runs to stills were 3,669,000 barrels, with stocks declining 22,000 barrels, indicating a demand during the period of 3,891,000 barrels daily.

"Available figures," the bureau said in discussing the general situation, "indicate that the ban on non-essential driving in District 1, effective January 7, will reduce the total demand for motor fuel materially below the bureau's forecast for that month. In view of the current situation, the revised forecast for the first quarter of 1943 indicates that the total demand for motor fuel may show a decline of about 15 percent compared to the same period in 1942, and that a decline of almost 30 percent in the normal consumption of gasoline by civilian motor vehicles may result.

"The decline in motor-fuel demand and the reduction in the consumption of fuel oils, by rationing and the cumulative effective of conversions to other fuels, indicate a decrease in the total demand for all oils of about 5 percent in the first quarter of 1943 compared with 1942. However, the current demand for domestic crude petroleum should continue at a rate of about 4 percent above the first quarter of last year when it was depressed by larger imports and

an abnormal liquidation of refined stocks.

"With the completion of new transportation projects, crude production and refinery operations should rise in view of the necessity for rebuilding depleted stocks in the East Coast during the spring and summer months and to meet steadily increasing export and military requirements."

Total demand for motor fuel this month is estimated by the bureau at 39,700,000 barrels, or 11 percent below the actual demand in February, 1942.

Stocks of finished and unfinished gasoline amounted to 73,216,000 barrels on November 30, or about 14,000,000 barrels less than on the same date in 1941, but additions to stocks in December and January appear to be greater than anticipated, due to the unexpected decline in gasoline demand. A further increase of 4,900,000 barrels in finished stocks is foreseen in February.

Estimating direct sales of natural gasoline at 1,700,000 barrels, the bureau forecast an indicated refinery production of 42,900,000 barrels, which it distributed among the several refining districts as follows: East Coast, Inland Texas, Texas Gulf Coast, Louisiana Gulf Coast, and Inland Louisiana-Arkansas, 18,290,000 barrels; Appalachian, 1,800,000 barrels; Indiana, Illinois, Kentucky, etc., 9,670,000 barrels; Oklahoma, 2,290,000 barrels; Kansas, 2,520,000 barrels; Rocky Mountain, 1,190,000 barrels, and California, 7,140,000 barrels.

Natural gasoline to be blended at refineries was estimated at 4,400,000 barrels. The application of an estimated yield of 37 percent to the straight-run and cracked gasoline production of 38,440,000 barrels gives total crude runs of 103,900,000 barrels, or 3,710,700 barrels daily.

Crude for export and to be used as fuel, and losses, is estimated at 5,800,000 barrels, giving an estimated total demand for domestic crude of 109,600,000 barrels, or 3,914,300 barrels a day.

Michigan Board Finds Supply Below Demand

Michigan Oil Advisory Board has recommended inclusion of Evart and Fork fields in prorated Michigan districts and extending current allowables in presently prorated areas. P. J. Hoffmaster, state conservation director, said two new fields will be placed under proration as of February 1. The schedule calls for maximum of 262½ barrels per day on 40-acre-unit wells, the same as in other prorated fields.

F. R. Frye, state petroleum engineer, estimated February production rates between 57,000 and 58,000 barrels per day against a needed supply of 63,000 to 66,000 barrels per day. "Nominations by pipe-line companies and refineries," he said, "indicate most buyers are operating from 10 to as high as 60 percent short of their requirements."

The hearing was largely taken up with reports of a special committee on the feasibility of a gas-pressure-maintenance program for the Reed City field. The committee, named two months ago on the recommendation of the advisory board, by disagreement on the merits of the proposal virtually put it back in the board's lap. K. B. Barnes, engineer with Gulf Refining Company, and William Waggoner, The Pure Oil Company gas engineer, concurred against the plan, with the third member, William Schoeneck, Ohio Oil Company engineer, recommending that the plan be carried out.

The three engineers differed in their views primarily on the question of the energy force in the field. Barnes and Waggoner contended that the field has its maximum energy in water drive and that the return of gas would be of little benefit and in fact might overcome part of the flushing action of the water and actually reduce the ultimate recovery. Schoeneck views the pool, which covers 4700 acres, as primarily a gas-energy pool and believes that return of the gas on the three structural high points of the field will both increase and speed recovery.

The field has produced approximately 12 million barrels of oil and is now under proration, producing between 26,000 and 28,000 barrels per day. Of the 188 wells in the field, mostly on 20-acre units, 50 are showing some degree of water.

Committee members agreed on an initial reserve of 66 million barrels in place.

Inability of the committee members to agree—Ohio Oil Company, The Pure Oil Company, and Gulf Refining Company control more than 75 percent of the producing area of the field—prompted a request by Director Hoffmaster for the committee to continue its survey for another 30 days and attempt "to find some other feasible means of conserving the gas if they cannot agree on the pressure-maintenance program."

January Drilling 40 Percent Below Year-Ago Mark

The industry started this year off with sharp curtailment of drilling as compared with that in early 1942. In the four weeks ended January 23, 1943, well completions were 40 percent under those in the corresponding weeks ended January 24, 1942. However, the wartime curb on drilling grew tighter in February of last year and by March was fully effective. Consequently, comparisons with a year ago soon will show much less difference than in the case of the January comparison.

In the four weeks period of January, 1943, well completions in the United States averaged 342 per week, the lowest average yet reached under the war restrictions. In December the average had been 383 completions per week, and the lowest for last year was the average of 351 completions per week, recorded for March, 1942. As compared with the 342 completions weekly in January this year, there were 572 per week in January of last year.

While the national average decrease from last January was 40 percent, the curtailment varied considerably by states and districts, with three states showing increases, counter to the general trend. California had 4 percent more completions in January, 1943, than in January, 1942; Kentucky had 64 percent more; and New York 8 percent more.

Among the states with relatively small

Completions in January, 1943

STATE OR DISTRICT	TOTAL: [2]Year Ago, (January, 1942)	TOTAL: [3]Month Ago, (Dec., 1942)	TOTAL: [1]Latest Data (January, 1943)	TOTAL: Percent Change From Year Ago	DETAILS FOR JANUARY, 1943: New Wells Drilled for Oil or Gas: Oil	Gas	Distillate	Dry	[4]Others	Old Wells Drilled Deeper	Total Footage Drilled
Alabama	2										
Arizona		1									
Arkansas	8	4	7	—12.5	4		1	2			48,862
California[5]	102	85	106	+ 3.9	87	1		18			354,495
Colorado		1	3		2			1			9,590
Florida											
Georgia	1										
Illinois[6]	284	[7]184	149	—47.5	81	1		62	2	3	373,519
Indiana	20	44	15	—25.0	3	3		6		3	21,821
Iowa											
Kansas	180	128	121	—32.8	53	3		60	2	3	406,173
Kentucky	11	13	18	+63.6	9			8		1	33,348
Louisiana	94	52	42	—55.3	26	3		13			338,230
North Louisiana	36	25	10	—72.2	5	1		4			47,536
South Louisiana	58	27	32	—44.8	21	2		9			290,694
Michigan	64	33	31	—51.6	12	2		17			77,907
Mississippi	20	4									
Missouri[8]	2		1	—50.0				1			1,365
Montana	17	7	12	—29.4	3	8		1			18,378
Nebraska	7										
New Mexico	31	28	21	—32.3	15			6			67,687
New York	99	91	107	+ 8.1	81				26		140,348
North Dakota											
Ohio	105	98	78	—25.7	11	40		24		3	184,282
Oklahoma	180	164	110	—38.9	38	8		53	3	8	327,981
Oregon											
Pennsylvania[9]	282	218	190	—32.6	87	11		1	87	4	319,578
South Dakota											
Tennessee[10]	1	1									
Texas	716	304	300	—58.1	151	15	2	116	11	5	1,280,878
East Tex. Border Co.'s	1										
East Texas Field	8										
Rest of Eastern Texas	46	25	12	—73.9	8			4			72,455
North Texas	143	58	67	—53.1	26			30	10	1	186,208
West Central Texas	32	58	22	—31.3	4	3		14		1	47,037
West Texas	200	50	64	—68.0	52	1		10		1	296,070
Texas Panhandle	66	20	25	—62.1	13	7		3		2	70,808
Gulf Coast, Upper	61	33	20	—67.2	13			7			153,668
Gulf Coast, Lower	93	37	46	—50.5	22	4	2	17	1		291,845
Southwest Texas	52	13	39	—25.0	13			26			148,010
South Central Texas	14	10	5	—64.3				5			14,777
Utah											
Washington											
West Virginia	54	69	64	+18.5	9	35		16		4	166,858
Wyoming	7	3	7	0.0	6			1			32,310
Total United States	2,287	1,532	1,382	—39.5	678	130	3	406	131	34	4,203,610

[1] Wells completed in 4 weeks, or 28 days, ended January 23, 1943. [2] Wells completed in 4 weeks, or 28 days, ended January 24, 1942. [3] Wells completed in 4 weeks, or 28 days, ended December 26, 1942. [4] Water input, gas injection, and salt water disposal wells. [5] California figures from A.P.I. except for December, 1942 and January, 1943. [6] Data on new wells from Illinois Geological Survey beginning January, 1942, except for January, 1943. [7] Illinois statistics for December revised to embody State Geological Survey data on new wells. [8] Figures from Missouri Geological Survey. [9] Bradford and Kane-Clarendon, Pennsylvania, figures from The Producers Monthly. [10] Figures from Tennesse Division of Geology.

decreases in completions as compared with a year ago was Arkansas, with 12 percent less. Ohio was off 26 percent, Indiana 25 percent, and Montana 29 percent. New Mexico showed a 32 percent decrease, Kansas 33 percent, Pennsylvania 33 percent. Louisiana's completions for January were off 55 percent from a year ago, and Michigan showed a 52 percent decrease, while Oklahoma was down 39 percent, and Texas 58 percent. West Central and Southwest Texas showed smaller decreases than other Texas districts (31 and 25 percent, respectively), and North and the Lower Gulf Coast were down around 50 percent, while remaining sections showed declines of 60 percent or more.

Among the 1369 wells completed in January, 1943, there were 676 oil producers (49 percent), 3 distillate wells, 124 gas wells (9 percent), 131 intake and other wells (10 percent), 34 were old wells deepened (3 percent), while 401 (29 percent) were dry holes.

Some further decrease in completions appears likely in February, as there were fewer rigs in use February 1 than January 1. Wells actually drilling or rigging up totaled 2173 on February 1, compared with 2259 on January 1, a decrease of 86.

Including wells temporarily shut down as well as those drilling or rigging up, there were in use on February 1 this year, 2691 drilling rigs, or 29.4 percent less than the 3816 reported for February 1 a year ago.

States and districts more active now than a year ago, however, include Arkansas, Colorado, Illinois, Indiana, Kentucky, New York, New Mexico.

Progress Being Made in Negotiation of New Oil Operations Law for Venezuela

Progress is reported being made in negotiations between the Venezuelan government and oil companies operating there concerning a proposed new petroleum law for Venezuela which would affect the concessions (leases) under which most of the oil companies function. The Venezuelan government last year proposed a new oil law, the terms of which would be more favorable to the government than prior laws, and desires that the oil companies signify in advance their willingness to convert their oil concessions to this new law.

Conferences have been held between the government and representatives of th companies in Caracas and during the past two months it is reported that considerable progress has been made in the negotiations. The proposed new law will be presented to the Venezuelan Congress when it convenes April 19, as legislation subject to immediate action. The matters now involved in the negotiations are those of fairness and practicability. If the petroleum law as finally passed is considered fair and workable, it is believed that many, if not all of the oil companies, doing business in Venezuela will convert such leases as they wish to retain to the new law.

For a while it appeared, judging from statements made by the President of Venezuela and oil company executives, that an impasse might be reached, but more recent developments indicate that such will not be the case. Later presidential statements were considerably more modified and it is not thought that action threatened by the president will lead to expropriation.

Venezuela has for decades depended almost wholly on import duties and oil royalties for its governmental revenue. Imports have now almost disappeared. Oil production, which reached a high of 228,000,000 barrels in 1941, was approximately 135,000,000 barrels in 1942.

Standard Oil Company of New Jersey, which in 1941 produced 270,000 barrels daily in the Maracaibo district and 90,000 daily in the Eastern oilfields, was producing half that amount in Maracaibo and about 50,000 barrels in the East in the fall of 1942. Caribbean Petroleum Company (Shell) reduced its output 40 percent to a total of 160,000 barrels daily. Hardest affected, however, was the Mene Grande Company (Gulf). Because of lack of ocean tanker transportation Mene Grande output was reduced from 60,000 barrels to 6000 barrels daily in Maracaibo and from 90,000 to 20,000 daily in the East. The company has no refineries in the Caribbean area. Shell and Standard have plants for local consumption in Venezuela and operate large refineries on the nearby islands of Curacao and Aruba.

Oil men here seem to have been annoyed at the statement of an American oil company executive in New York who his company would be willing to pay 20 percent royalties. They pointed out that this company has not yet shipped any oil from Venezuela. They intimated that the statement was made to "put the others on the spot" and to encourage government approval of a contract the company has had pending for some time.

A concensus of the opinions of government and petroleum officials would probably hold that a friendly agreement will be reached which will include additional royalties by the companies and further participation in the government agricultural program. With the additional funds the government is expected to build up a fund which it will use to promote an extensive program of industrialization and immigration following the war.

Rigs in Operation February 1

STATE OR DISTRICT	TOTAL RIGS IN OPERATION (Drilling, Rigs Up, Shut Down) Year Ago, Feb. 1, 1942	Month Ago, Jan. 1, 1943	Now, Feb. 1, 1943	Percent Change From Year Ago	DETAILS OF FEBRUARY 1, 1943 FIELD ACTIVITY Rigs in Operation: Drilling	Rigs Up	Shut Down	Prelim. Activity: Derricks	Locations	Total Operations
Alabama	5		1	— 80.0	1					1
Arkansas	30	23	37	+ 23.3	25	4	8	5	16	58
California	248	205	192	— 22.6	118	41	33		131	323
Colorado	20	27	30	+ 50.0	6		24	1	1	32
Florida	1	3	2	+100.0			2			2
Georgia		1								
Illinois	215	257	254	+ 18.1	203	18	33		33	287
Indiana	56	53	60	+ 7.1	43	6	11		24	84
Iowa	1	2	3	+200.0	2		1			3
Kansas	201	177	172	— 14.4	145	20	7	16	23	211
Kentucky	29	54	56	+ 93.1	40	4	12		10	66
Louisiana	178	111	124	— 30.3	89	14	21	11	82	217
North Louisiana	55	38	50	— 9.1	28	8	14	4	13	67
South Louisiana	123	73	74	— 39.8	61	6	7	7	69	150
Michigan	175	95	94	— 46.2	39	10	45	23	20	137
Mississippi	23	13	12	— 47.8	9		3		1	13
Missouri	6	9	9	+ 50.0	2	1	6			9
Montana	63	60	55	— 12.6	23	5	27		8	63
Nebraska	25	22	21	— 16.0	13	1	7	1	2	24
New Mexico	119	66	65	— 45.4	41	2	22	1	11	77
New York	125	130	133	+ 6.4	74	28	31	6	31	170
North Dakota		2							1	1
Ohio	276	244	202	— 26.8	145	20	37	13	37	252
Oklahoma	324	231	231	— 28.7	197	18	16	8	18	257
Oregon		1	1				1			1
Pennsylvania	300	287	257	— 14.3	197	21	39	14	39	310
South Dakota	2	4	3	+ 50.0	1		2		1	4
Tennessee	5	3	3	— 40.0	1	1	1		1	4
Texas	1,039	607	591	— 43.1	455	39	97	28	246	865
East Texas Border Counties	12	9	9	— 25.0	7	2		1	10	20
East Texas Field	3									
Rest of East Texas	64	27	29	— 54.6	22	2	5	2	10	41
North Texas	139	104	92	— 33.8	67	5	20	2	77	171
West Central Texas	66	61	43	— 34.8	26	3	14		8	51
West Texas	352	204	218	— 38.0	174	9	35	4	41	263
Texas Panhandle	99	47	39	— 60.6	33	2	4	2	15	56
Gulf Coast, Upper	100	49	48	— 52.0	39	4	5	8	35	91
Gulf Coast, Lower	121	66	70	— 42.1	57	6	7	5	28	103
Southwest Texas	42	27	29	— 30.9	21	4	4	3	17	49
South Central Texas	41	13	14	— 65.8	9	2	3	1	5	20
Utah	4	5	5	+ 25.0	2		3		1	6
West Virginia	296	52	28	— 90.5	21	3	4	2	4	34
Wyoming	50	53	50		22	3	25		1	51
Total United States	3,816	2,797	2,691	— 29.4	1,914	259	518	129	742	3,562

Humble Restricts Runs From West Texas Area

Humble Pipe Line Company restricted its crude runs from all West Texas areas, excepting the Yates and World-Powell fields, effective February 1, to 88 percent of the allowable authorized by the Texas Railroad Commission. The order applies to crude produced and purchased by Humble Oil & Refining Company, involving an aggregate of 22,500 barrels per calendar day. The two exempted fields yield crude that has been classed as essential to the war effort, and are not subject to production holidays or pipe line proration. The district has not been subjected to pipe line proration since Humble curtailed its runs during August, 1942, to 55 percent of the allowable.

Substantial Production Deficiency Seen Under February State Quotas

Underproduction of petroleum in the amount of about 54,761 barrels daily during February is in prospect under allowables scheduled for the month in the 8 prorated states and under current trends of output in unprorated states.

For the whole month, the indicated underproduction would total approximately 1,500,000 barrels and require withdrawal of that quantity from storage, which already is comparatively light.

The outlook for February is approximately a repetition of the actual results in January, when the nation underproduced total petroleum by about 59,000 barrels daily.

The indicated deficiency of production for February, if it materializes, will be the net result of underproduction in Arkansas, Kansas, Michigan, Oklahoma, and Illinois outweighing overproduction in Louisiana, Texas, and Mississippi.

Details on scheduled allowables and producing trends and on their relation to the government's schedules of desirable production in January and February appear in an accompanying table.

Illinois Salt Water Disposal Regulation Is Considered

A proposal requiring Illinois oil operators to dispose of salt water and brine, by-products of their wells, more than a quarter of a mile from mine property will soon be submitted to Illinois Attorney General George F. Barrett for his approval.

Samuel F. Peterson, petroleum engineer of the state division of oil and gas conservation, disclosed that he would present the plan to Barrett following its approval at a meeting of oil well and coal mine operators.

If the attorney general approves it, Peterson said, it would be placed in operation through an order of the state oil and gas division.

Stanolind Buys Delta Properties at Slaughter

Stanolind Oil & Gas Company strengthened its position as second largest producer in West Texas through the purchase of Delta Drilling Company's producing properties in the Hockley County sector of the Slaughter field for $575,000 cash. The deal involves six leases, embracing 620 acres with 17 flowing and pumping wells that have rated potential of 11,029 barrels and base allowable of 324 barrels daily.

Westland Oil Corporation Moves Offices to Houston

At the annual stockholders' meeting recently of Westland Oil Corporation, R. J. Wolfe and W. D. Gray were elected to the directorate. Gray was elected president of the company.

The offices were moved February 1 from Tulsa to Houston and will be located at 815 Second National Bank Building.

Material for Development of Texarkana Gas Field Denied

On the ground that there is no outlet at present for the gas, the Petroleum Administration for War has denied an application made by the Arkansas Oil and Gas Commission for authorization to use material for the development of the Texarkana gas condensate field in Miller County, Arkansas. The Commission sought the material on the basis of one well to 160 acres.

Underproduction of Petroleum Indicated for February Under Scheduled Allowables

(Barrels daily of crude oil, condensate, natural gasoline, and other petroleum liquids)

STATE	Recommended Total Petroleum Production in January (PAW Schedule)	State Allowable of Crude in January	Actual Production in 4 Weeks Ended January 30, 1943			Difference of Actual Crude Production from Allowable in January	Excess or Deficiency of Actual Total Production in January	Recommended Total Petroleum Production in February (PAW Schedule)	[10]Actual Production in Prospect for February, as Scheduled in Allowables or Forecast by Trends in Unprorated States			Excess or Deficiency of Total Actual Production Indicated for February
			[1]Crude Oil	[2]Natural Gasoline and Other Products	Total Petroleum				Crude Oil	Natural Gasoline and Other Products	Total Petroleum	
Prorated States:												
Arkansas	78,300	74,826	75,050	2,967	78,017	+ 224	— 283	78,700	72,671	3,000	75,671	— 3,029
California	815,000	771,000	773,850	42,083	815,933	+ 2,850	+ 933	823,700	780,200	43,500	823,700	[5] .....
Kansas	310,000	304,600	291,350	5,821	297,171	—13,250	—12,829	310,500	305,500	5,000	310,500	[7] .....
Louisiana	347,500	327,653	339,350	20,811	360,161	+11,697	+12,661	349,800	328,357	31,000	359,357	[8]+ 9,557
Michigan	63,700	58,430	59,700	107	59,807	+ 1,270	— 3,893	63,700	57,800	100	57,900	— 5,800
New Mexico	105,300	99,300	97,000	5,822	102,822	— 2,300	— 2,478	105,800	100,000	5,800	105,800	.....
Oklahoma	400,600	370,600	347,900	29,867	377,767	—22,700	—22,833	395,300	365,300	30,000	395,300	[6] .....
Texas	1,426,800	1,307,553	1,329,850	106,289	1,436,139	+22,297	+ 9,339	1,452,000	1,336,161	116,553	1,452,714	[4]+ 714
Total 8 Prorated States	3,547,200	3,313,962	3,314,050	213,767	3,527,817	+ 88	—19,383	3,579,500	3,345,989	234,953	3,580,942	+ 1,442
Unprorated Flush States:												
Illinois	272,600	.....	238,950	10,324	249,274	.....	—23,326	272,200	[3]235,000	[3]10,000	245,000	—27,200
Mississippi	50,000	.....	58,900	.....	58,900	.....	+ 8,900	50,000	[3]58,000	.....	58,000	+ 8,000
Total 10 Flush Production States	3,869,800	.....	3,611,900	224,091	3,835,991	.....	—33,809	3,901,700	3,638,989	244,953	3,883,942	—17,758
Other States	254,400	.....	214,600	14,442	229,042	.....	—25,358	260,600	[3]214,000	[3]14,000	[3]228,000	—32,600
Total United States	4,124,200	.....	3,826,500	238,533	4,065,033	.....	—59,167	4,162,300	3,852,989	258,953	4,111,942	[9]—50,358

[1]Data by American Petroleum Institute.
[2]Approximate; being same as output reported for November by Bureau of Mines.
[3]Estimate based on recent trends of production.
[4]Actual overproduction in Texas will be about 22,254 barrels above this indicated excess, thereby amounting to about 22,297 daily, in event of repetition of experience in January, when indicated excess was 43 barrels daily but actual excess about 9339.
[5]Although California until recently was usually underproducing allowable, the actual production in January conformed very closely with the allowable, and similar fulfillment of allowables may be expected in February.
[6]Although February allowables conform with recommended production, Oklahoma's actual output of crude will be around 22,700 barrels under allowable if January experience is repeated. Crude allowable for February is 5300 barrels lower than that for January.
[7]While February allowables conform with recommended production, Kansas' actual output of crude will be around 13,250 barrels under allowable if January experience is repeated. February allowable is 900 barrels above that of January.
[8]Actual overproduction of crude in Louisiana, above that contemplated under PAW recommendations, will be about 18,850 barrels daily, or 9293 above this indicated excess, if there is a repetition of experience in January, when indicated excess was 7153 barrels but actual excess about 18,850.
[9]Actual underproduction in United States may be around 54,761 barrels daily, considering circumstances given in footnotes 4, 6, 7, and 8, on Texas, Oklahoma, Kansas, and Louisiana.
[10]Details on state allowables for February include the following:

Arkansas: Crude oil allowable figure includes both oil and condensate; natural gasoline output estimated at 3000 barrels daily.

California: Figures here given for February are allowables as scheduled by Conservation Committee of California Oil Producers. However, official January crude allowable was overproduced about 2850 barrels and February allowable is 9200 barrels above that of January.

Kansas: Allowables here given are subject to final approval by Kansas Corporation Commission.

Louisiana: Figures here given are not allowables but actual production contemplated by Conservation Department, allowing for estimated output of 31,000 barrels liquid hydrocarbons other than crude and estimated crude oil underproduction of 12,500 barrels under scheduled allowables aggregating 340,857 barrels daily.

Michigan: These figures are February production aimed at under regulations which do not fix definite state allowable.

New Mexico: Allowable of all petroleum, 105,800 barrels daily, of which it is estimated about 5800 daily will be accounted for by natural gasoline, butane, and propane.

Oklahoma: Figures given here are allowables, but state underproduced crude allowable about 22,700 barrels daily in January and similar result may be expected for February, with allowable 5300 barrels lower than that for January.

Texas: Texas Railroad Commission fixed crude allowable at 1,424,783 barrels daily; however, it estimated underproduction of 6.22 percent, or 88,622 daily, or a net allowable of 1,336,161 barrels. This allowable does not include an estimated 116,553 barrels of unprorated distillate and other fluids which are produced daily, and which would bring the total net production to about 1,452,714 barrels daily.

Wholesale Prices of Refined Products in Principal Markets

REFINED GASOLINE	Current Range (Cents a gal.)		Changes from Month Ago	
Oklahoma Refineries:				
60 Octane and Under	5⅛	5¼	...	...
63-66 Octane	5½	5⅝	...	...
72-74 Octane	5⅞	6	...	...
78 Octane, Ethyl	6¾	6⅞	...	...
Mid-Western Tank Car:				
60 Octane and Under	5⅛	5¼	...	...
63-66 Octane	5½	5⅝	...	...
72-74 Octane	5⅞	6	...	...
78 Octane, Ethyl	6¾	7⅛	...	...
New York Harbor:				
68-70 Octane	9¼	9¼	...	...
72-74 Octane	9¼	10¼	...	...
Min. 80 Octane, '39				
Gulf Coast:				
60 Octane unleaded	5	5	...	...
65 Octane unleaded	5⅛	5⅛	...	...
68 Octane unleaded	5¼	5⅝	...	+⅜
70 Octane unleaded	5½	5⅝	+¼	+⅛
72-74 Octane leaded	5⅝	5¾	...	...
Min. 80 Octane, '39 Research	5⅝	6	+¼	...

NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	3⅞	3⅞	...	...
F.O.B. Br'kenr'ge, Tex.	3½	3½	...	...

KEROSINE				
Oklahoma Refineries:				
41-43 water white	4⅜	4½	...	...
42-44 water white	4½	4½	...	...
Mid-Western Tank Car:				
41-43 water white	4⅜	4⅜	...	...
42-44 water white	4½	4½	...	...
New York Harbor	6⅞	6⅞	...	...
Gulf Coast:				
41-43 water white	3⅞	4	...	+⅛

RANGE OIL				
At Oklahoma Refineries	4	4⅛	...	...
In Mid-Western Market Group 3, basis	4	4	...	...

LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 prime white	3⅞	3⅞	...	...
No. 1 straw	3⅞	4	...	...
No. 2 straw	3⅝	3⅝	...	...
No. 3	3½	3½	...	...
Mid-Western Tank Car:				
No. 1 prime white	3⅞	3⅞	...	...
No. 2 straw	3⅝	3⅝	...	...
No. 3	3½	3½	...	...
New York Harbor:				
No. 1	6⅞	6⅞	...	...
No. 2	6¾	6¾	...	...
No. 3	6¾	6¾	...	...
Gulf Coast:				
No. 2	3¾	3¾	...	...

HEAVY FUELS	Current Range (Per Bbl.)		Changes from Month Ago	
Oklahoma Refineries:				
No. 6	$0.90	$0.90	+.10	...
14-16 Gravity	.95	.95	...	...
Mid-Western Tank Car:				
No. 5	.85	.85	...	...
No. 6	.80	.80	...	...
New York Harbor:				
No. 5	1.95	2.10	...	...
No. 6	1.65	1.65	...	...

BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$0.85	$0.85	...	...
New York Harbor	1.65	1.65	...	...

DIESEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$1.65	$1.65	...	...
New York Harbor	2.78	2.78	...	...

LUBRICATING OIL (Cents a gallon)				
Oklahoma Refineries:				
Bright stock (viscosity at 210°):				
200 vis. D, 10-25 pour point	27	27	...	...
150-160 vis. D:				
0-10 pour point	23	23	...	...
10-25 pour point	22½	23	...	...
25-40 pour point	23	23	...	...
150-160 vis. E	22	22	...	...
120 vis. D, 0-10 pour point	22	22	...	...
Cylinder Stocks:				
600 s.r. dark green	8½	8½	...	...
600 s.r. olive green	10	11	...	...
631 s.r.	18½	18½	...	...
Neutral Oils (viscosity at 100°, 0-10 pour point):				
Pale Oils:				
60- 85 vis. No. 2 color 8	8	8	...	...
86-110 vis. No. 2 color 8½	8½	8½	...	...
150 vis. No. 3 color	14½	14½	...	...
180 vis. No. 3 color	15	15	...	...
200 vis. No. 3 color	15	15	...	...
250 vis. No. 3 color	16	16½	...	...
280 vis. No. 3 color	17	17	...	...
300 vis. No. 3 color	18	18	...	...
Red Oils:				
180 vis. No. 5 color	15	15	...	...
200 vis. No. 5 color	15	15	...	...
280 vis. No. 5 color	..	..	...	...
300 vis. No. 5 color	17	17½	...	...
Western Pennsylvania: Cylinder Stocks:				
600 s.r. filtrable	15	15	...	...
650 s.r.	15½	15½	...	...
600 flash	16	16	...	...
630 flash	17	17	...	...

LUBRICATING OIL (Cents a gal.)			Changes from Month Ago	
Bright Stock (No. 8 Color, 145-155 vis. at 210°, 540-550 fl.):				
10 pour test	30½	30½	...	...
15 pour test	29½	29½	...	...
25 pour test	25	25	...	...
Viscous Neutrals (No. 3 Color, vis. at 70°):				
200 vis. (180 at 100), 420-425 fl.:				
Zero pour test	31½	31½	...	...
10 pour test	30½	30½	...	...
15 pour test	29½	29½	...	...
25 pour test	23	26	...	...
150 vis. (143 at 100), 400-405 fl.:				
Zero pour test	29½	29½	...	...
10 pour test	28½	28½	...	...
15 pour test	27½	27½	...	...
25 pour test	21	24	...	...

EASTERN STATES CRUDE OIL PRICES

FIELD—	Flat Price	Date Posted
Bradford-Allegany	$3.00	3-26-42
Sw. Pa. Pipe Line	2.65	3-26-42
Eureka Pipe Line, W. Va.	2.59	3-26-42
Corning Grade, Ohio	1.31	5-27-41
Buckeye Crude, Ohio	2.30	6-18-41

MAJOR CRUDE OIL PRICE CHANGES

	Penna. Grade	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
Jan. 1, 1940	Up 25	.....	.....
Feb. 1, 1940	.....	.....	Cut *7
May 22, 1940	Cut 25	.....	.....
June 18, 1940	Cut 25	.....	.....
July 12, 1940	Cut 25	.....	.....
Aug. 28, 1940	Cut 15	.....	.....
Nov. 12, 1940	Up 15	.....	.....
Dec. 17, 1940	Up 15	.....	.....
Jan. 27, 1941	Up 15	.....	.....
April 1, 1941	.....	Up 5	.....
April 23, 1941	Up 10	.....	.....
April 24, 1941	.....	.....	Up *6
May 19, 1941	.....	Up 10	.....
May 21, 1941	Up 15	.....	.....
May 22, 1941	.....	.....	Up *6
June 18, 1941	Up 20	.....	.....
Aug. 14, 1941	Up 23	.....	.....
Aug. 25, 1941	Cut 23	.....	.....
March 26, 1942	Up 25	.....	.....

* Signal Hill 26 gravity.

CRUDE OIL PRICES IN CALIFORNIA

Prices per barrel in field, posted by Standard Oil Company of California, effective May 23, 1941
All gravities above those quoted take highest price offered in that field

Gravity	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Playa del Rey	Olinda, Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier, East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Newhall, Kern River, Kern Front, McKittrick, Round Mountain	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Kettleman Hills	Elwood Terrace
14-14.9	.....	$0.68	.....	.....	$0.71	.....	.....	$0.70	.....	$0.70	$0.70	$0.70	$0.72	.....	.....	$0.73	.....	.....	.....	$0.73	$0.73	$0.73	.....	.....
15-15.9	.....	71	.....	.....	75	$0.76	.....	72	.....	72	71	72	72	.....	.....		.....	.....	.....	73	73	73	.....	.....
16-16.9	.....	74	$0.79	.....	79	79	.....	75	.....	74	73	75	72	.....	.....		.....	.....	.....	73	75	73	.....	.....
17-17.9	.....	78	82	.....	82	82	.....	78	.....	77	76	78	72	.....	.....		.....	.....	.....	75	78	73	.....	.....
18-18.9	$0.80	82	86	.....	86	85	.....	81	.....	80	79	82	74	.....	.....		.....	.....	.....	78	81	73	.....	.....
19-19.9	84	86	90	.....	89	88	.....	85	.....	83	82	85	77	.....	.....	Wheeler Ridge	.....	.....	$0.73	81	84	75	.....	.....
20-20.9	88	90	94	.....	93	92	$0.80	88	.....	86	85	89	80	.....	.....		.....	.....	76	85	87	77	.....	.....
21-21.9	92	94	98	.....	96	95	84	91	.....	89	89	92	84	.....	.....		.....	.....	79	90	90	80	.....	.....
22-22.9	96	98	1.02	$0.88	99	98	87	95	.....	93	93	96	87	.....	.....	$0.76	.....	.....	83	94	93	83	.....	.....
23-23.9	1.00	1.02	1.05	92	1.02	1.01	.....	98	.....	97	98	1.00	91	.....	.....	80	.....	.....	87	99	96	86	.....	.....
24-24.9	1.03	1.06	1.07	97	1.05	1.04	F.O.B.	1.01	.....	1.01	1.02	1.03	94	$0.99	.....	83	.....	.....	90	1.03	99	89	.....	.....
25-25.9	1.07	1.09	1.10	1.01	1.08	1.07	Our	1.04	.....	1.05	1.06	1.07	98	1.02	.....		.....	.....	94	1.07	1.01	92	.....	.....
26-26.9	1.11	1.12	1.12	1.06	1.11	1.10	Pipe	1.08	.....	1.09	1.10	1.11	1.01	1.06	.....		.....	.....	97	1.11	1.04	95	.....	.....
27-27.9	1.15	1.15	1.15	1.10	1.14	1.14	Line	1.11	.....	1.13	.....	1.15	1.05	1.10	$1.04	.....	.....	.....	1.01	1.15	1.07	98	.....	.....
28-28.9	1.18	1.18	1.17	1.15	1.17	1.17	.....	1.14	.....	1.17	.....	.....	1.08	1.13	1.08	.....	.....	.....	1.04	1.19	1.10	1.00	.....	.....
29-29.9	1.20	1.21	.....	1.19	1.20	1.20	.....	.....	$1.17	.....	.....	.....	1.12	1.17	1.12	.....	.....	.....	1.07	1.24	1.13	1.02	.....	.....
30-30.9	1.23	1.24	.....	.....	1.23	1.22	.....	.....	1.21	.....	.....	.....	1.15	1.21	1.15	.....	$1.01	$1.09	1.10	1.28	1.16	1.04	.....	F.O.B.
31-31.9	.....	.....	.....	.....	.....	1.24	.....	.....	1.25	.....	.....	.....	1.19	1.24	1.19	.....	1.04	1.12	1.14	.....	.....	1.06	.....	Ship
32-32.9	.....	.....	.....	.....	.....	.....	.....	.....	1.29	.....	.....	.....	1.23	1.28	1.23	.....	1.07	1.14	1.17	.....	.....	1.09	.....	.....
33-33.9	.....	.....	.....	.....	.....	.....	.....	.....	1.32	.....	.....	.....	1.27	.....	1.26	.....	1.10	1.17	.....	.....	.....	1.11	.....	$1.22
34-34.9	.....	.....	.....	.....	.....	.....	.....	.....	1.36	.....	.....	.....	1.31	.....	1.30	.....	1.13	1.20	.....	.....	.....	1.13	.....	1.25
35-35.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.35	.....	.....	.....	1.16	1.22	.....	.....	.....	.....	$1.23	1.28
36-36.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.39	.....	.....	.....	1.19	1.25	.....	.....	.....	.....	1.26	.....
37-37.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.43	.....	.....	.....	1.22	.....	.....	.....	.....	.....	1.29	.....
38-38.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.47	.....	.....	.....	1.25	.....	.....	.....	.....	.....	.....	.....
39-39.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40-40.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Continued on next page

Gravity-Scale Crude Oil Prices in Mid-Continent Fields

Posted in most instances between May 19 and May 21, 1941

GRAVITY	Oklahoma-Kansas		North Louisiana-Arkansas					Inland Texas and New Mexico			South Texas		Texas Gulf Coast			Louisiana Gulf Coast							
	Stanolind, Gulf, Texas, Skelly, Barnsdall, Tidewater, Sinclair, Phillips	Carter, Magnolia, Shell	[1]Rodessa, etc.	[2]Champagnolle, etc.	Bunkie, Eola, Olla, S. Olla, Little Crk. (by Standard)	Lisbon, La (by Gulf)	[3]Atlanta, Buckner, etc., Ark.	North and West Central Texas	[4]Eastern Texas	West Texas, [17]Panhandle, New Mexico	[5]Refugio Type	[6]Mirando Type	[7]Gulf Coast	[8]Anahuac Type	[9]Dickinson Type	[10]Gulf Coast	[11]Standard of La.	[12]Texas Co.	[13]Texas Co.	[14]Magnolia Pet. Co.	[15]Shell Oil Co.	Jennings (by Gulf)	[16]Rocky Mt. Area (Salt Creek, etc.)
17–17.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.94	....	....	....
18–18.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....
19–19.9	....	....	....	....	....	....	....	....	$0.80	$0.70	$1.08	$1.03	$1.06	$0.98	$0.93	$1.06	....	....	....	.98	$0.99	....	....
20–20.9	$0.85	$0.75	....	....	....	....	$0.68	$0.81	.82	.72	1.10	1.05	1.08	1.00	.95	1.08	$0.90	....	....	1.00	1.01	....	....
21–21.9	.87	.78	....	....	....	....	.70	.83	.84	.74	1.12	1.07	1.10	1.02	.97	1.10	.92	....	....	1.02	1.03	....	....
22–22.9	.89	.81	....	....	....	....	.72	.85	.86	.76	1.14	1.09	1.12	1.04	.99	1.12	.94	....	....	1.05	1.05	....	....
23–23.9	.91	.84	....	....	....	....	.74	.87	.88	.78	1.16	1.11	1.14	1.06	1.01	1.14	.96	....	....	1.08	1.07	....	....
24–24.9	.93	.87	$0.88	$0.86	$1.03	....	.76	.89	.90	.80	1.18	1.13	1.16	1.08	1.03	1.16	.98	....	....	1.11	1.09	....	....
25–25.9	.95	.90	.90	.88	1.05	....	.78	.91	.97 .92	.82	1.20	1.15	1.18	1.10	1.05	1.18	1.00	....	....	1.14	1.11	....	....
26–26.9	.97	.93	.92	.90	1.07	....	.80	.93	.99	.84	1.22	1.17	1.20	1.12	1.07	1.20	1.02	....	....	1.17	1.13	....	....
27–27.9	.99	.96	.94	.92	1.09	$0.81	.82	.95	1.01	.86	1.24	1.19	1.22	1.14	1.09	1.22	1.04	....	....	1.19	1.15	....	....
28–28.9	1.01	.99	.96	.94	1.11	.83	.84	.97	1.03	.88	1.26	1.21	1.24	1.16	1.11	1.24	1.06	$1.06	....	1.21	1.17	....	$0.96
29–29.9	1.03	1.02	.98	.96	1.13	.85	.86	.99	1.05	.90	1.28	1.23	1.26	1.18	1.13	1.26	1.08	1.08	....	1.23	1.19	....	.98
30–30.9	1.05	1.05	1.00	.98	1.15	.87	.88	1.01	1.07	.92	1.30	1.25	1.28	1.20	1.15	1.28	1.10	1.10	$1.05	1.25	1.21	....	1.00
31–31.9	1.07	1.07	1.02	1.00	1.17	.89	.90	1.03	1.09	.94	1.32	1.27	1.30	1.22	1.17	1.30	1.12	1.12	1.07	1.27	1.23	$1.07	1.02
32–32.9	1.09	1.09	1.04	1.02	1.19	.91	.92	1.05	1.11	.96	1.34	1.29	1.32	1.24	1.19	1.32	1.14	1.14	1.09	1.29	1.25	1.09	1.04
33–33.9	1.11	1.11	1.06	1.04	1.21	.93	.94	1.07	1.13	.98	1.36	1.31	1.34	1.26	1.21	1.34	1.16	1.16	1.11	1.31	1.27	1.11	1.06
34–34.9	1.13	1.13	1.08	1.06	1.23	.95	.96	1.09	1.15	1.00	1.38	1.33	1.36	1.28	1.23	1.36	1.18	1.18	1.13	1.33	1.29	1.13	1.08
35–35.9	1.15	1.15	1.10	1.08	1.25	.97	.98	1.11	1.17	1.02	1.40	1.35	1.38	1.30	1.25	1.38	1.20	1.20	1.15	....	....	1.15	1.10
36–36.9	1.17	1.17	1.12	1.10	1.27	....	1.00	1.13	1.19	1.04	1.42	1.37	1.40	1.32	1.27	1.40	1.22	1.22	1.17	....	....	1.17	1.12
37–37.9	1.19	1.19	1.14	1.12	1.29	....	1.02	1.15	1.21	1.06	1.44	1.39	1.42	1.34	1.29	1.42	1.24	....	1.19	....	....	1.19	1.14
38–38.9	1.21	1.21	1.16	1.14	1.31	....	1.04	1.17	1.23	1.08	1.46	1.41	1.44	1.36	1.31	1.44	1.26	....	1.21	....	....	1.21	1.16
39–39.9	1.23	1.23	1.18	1.16	1.33	....	1.06	1.19	1.25	1.10	1.48	1.43	1.46	1.38	1.33	1.46	1.28	....	1.23	....	....	1.23	1.18
40 & Up	1.25	1.25	1.20	1.18	1.35	....	1.08	1.21	1.27	1.12	1.50	1.45	1.48	1.40	1.35	1.48	1.30	....	1.25	....	....	1.25	1.20

[1] Gulf schedule for Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, El Dorado and Rodessa, Texas. Standard of La. schedule for Cotton Valley, Rodessa, Shreveport (Cross Lake), and Caddo. Magnolia schedule for Haynesville, Cotton Valley, Rodessa, and Miller Co., Ark. Texas Co. schedule for "North Louisiana."

[2] Schedule of Standard of La. for De Soto, Sabine, Fouke, Homer, Miller Co., Sugar Creek. Schedule of Root Petroleum Co. for Nick Springs, Urbana light, Schuler sweet, Rainbow, South Field (El Dorado), and Champagnolle.

[3] Schedule of Standard of La. for Atlanta, Buckner, Magnolia, Schuler: Jones sand, Village. Schedule of Root Petroleum Co. for Schuler: Reynolds lime, and Schuler: Jones sand.

[4] Humble schedule for Anderson, Cherokee, Limestone, and Navarro counties and Navarro Crossing field, except that prices from 80 to 92 cents represent postings only for Hawkins field, Wood County. Rodessa, Texas, prices are same as in Rodessa, La.-Ark.

[5] Schedule for Refugio, E. White Point, Greta, Melon Creek, Midway, Minnie Bock, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

[6] Schedule for Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (N. and S.), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manilla, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

[7] Humble schedule for Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa, Mykawa new, Raccoon Bend, South Thompsons, Sugarland, Thompsons, Webster. Texas Co. schedule for Ariola, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, Withers; except that schedule provides $1.36 top, 34 gravity. Pan American Prod. Co. schedule for Hastings and South Houston. Gulf schedule for Spindle Top, Sour Lake, Lovells Lake, West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompsons, Lochridge, Dyersdale, and Hull (old) crudes. Sun schedule for Barbers Hill, Batson old, Cotton Lake, Esperson below 35 gravity, Goose Creek, Greens Lake, Hull below 25, Humble below 35, Nome, North Dayton below 25, Orange, Saratoga, Sour Lake, South Liberty.

[8] Humble schedule for Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull old and new, Pierce Junction, Red Fish Reef, Turtle Bay fields. Sun schedule for Anahuac, Caplen, and Turtle Bay. Gulf schedule for Anahuac, Hull new, Pierce Junction, Orange and Thompsons deep.

[9] Humble schedule for Dickinson, Gillock, Hardin, League City, and Rowan fields. Pan American Prod. Co. schedule for Gillock crude.

[10] Sun Oil Co. schedule for Bayou Blue, Chacahoula, Fausse Pointe, Hackberry (E. and W.), and Vinton. Texas Co. schedule for Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville and Port Barre for crude ranging in gravity up to 27-27.9; for lighter oils in those fields see Footnote 12. Gulf schedule for Edgerly, Starks, Vinton, E. Hackberry, Cameron Meadows, Leesville. Deduct 10 cents for Gulf's prices for Timbalier Bay, Grand Bay, Quarantine Bay, and West Bay. Deduct 2 cents for Standard of La. prices for University (Baton Rouge) crude of 30 to 35.9 gravity.

[11] Standard of La. schedule for Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, N. Crowley, S. Crowley, Port Barre, Potash, Roanoke, St. Martinville. Deduct 10 cents for Anse La Butte.

[12] Texas Co. schedule for Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club. Add 8 cents to these prices for Texas Co. postings for 28 or higher gravity at Bay St. Elaine, Caillou Island, Iberia, Lake Pelto, Leesville, Port Barre, and Lake Barre.

[13] Texas Co. schedule for Delta Farms, Golden Meadows, Lake Salvador.

[14] Magnolia schedule for Lockport, Cameron Meadows, West Gueydan.

[15] Shell Oil Co. schedule at Iowa, Black Bayou, White Castle. For Shell's prices at Roanoke and Chalkley fields deduct 5 cents. For Shell's prices at Gibson, South Houma, Hester, and West Lake Verret fields deduct 10 cents.

[16] Sinclair-Wyoming Oil Co. prices at Salt Creek, Lost Soldier, Iron Creek, effective May 20, 1941. Deduct 10 cents for East Mahoney and deduct 20 cents for Mahoney and Wertz.

[17] Add 3 cents for Panhandle prices.

MID-CONTINENT FLAT PRICES

FIELD—	Flat Price	Date Posted
Arkansas:		
Big Crk., McKamie, Macedonia, Dorcheat, sour dist.	$1.25	2– 3–43
Dorcheat, Macedonia dist'l.	1.30	11–16–42
Smackover, Heavy	.83	5–22–41
Texarkana sweet distillate	1.40	–42
Louisiana, North:		
Cotton Valley Distillate	1.40	9– 1–41
Cotton Valley (Holloway sn.)	1.25	5–22–41
Lisbon Distillate	1.20	5–22–41
Urania	1.15	5–22–42
Louisiana, South:		
Erath	1.21	5–21–41
Garden Island	1.36	5–21–41
Happytown	1.15	5–20–41
Lafitte, Paradis	1.19	5–21–41
Lake Arthur & Tepetate	1.18	5–21–41
Lake Mongoulois	1.36	5–21–41
Ville Platte	1.20	5–21–41
Nebraska:		
Falls City, in field	.90	8– 1–41
Falls City, in tank cars	.95	8– 1–41
Shubert, in tank cars	.97	8– 1–41
Texas:		
Alice, Benavides (No. Sweden), Ben Bolt, Clark-Muil, Sun and Tom Graham	1.35	5–21–41
Cayuga	.90	5–21–41
Chapel Hill 50° and up	1.25	3–19–42
Chapel Hill below 50°	1.18	1–20–42
Clay Creek	1.00	5–22–41
Cleveland	1.26	5–21–41
Conroe	1.43	5–21–41
Esperson 35° & up; S. Esperson (Sun Oil)	1.30	5–22–41
East Texas, Flag Lake	1.25	5–20–41
Flour Bluff, East Flour Bluff, and La Rosa	1.33	5–21–41
Hockley-Cochran Counties	.87	5–21–41
Livingston, Cleveland	1.25	5–20–41
Long Lake	1.23	5–21–41
Luling	1.05	5–21–41
Lytton Springs	1.17	5–21–41
North Rincon	1.45	2– 3–43
Salt Flat, North Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.14	5–21–41
Satsuma, Tomball	1.40	5–21–41
Sun Oil Co. at Batson (new), Fig Ridge, Hardin, Hull 25 and up, Humble 35 and up, LaBelle, N. Dayton 25 and up, Oyster Bayou, Seabreeze, S. China, W. Orange and Willow Slough	1.25	5–22–41
South Cotton Lake	1.35	5–22–41
Sun, N. Sun, N. Rincon, Garcia	1.35	5–22–41
Talco	.79	5–21–41
Van	1.08	5–21–41
Yates (Deep)	.95	5–20–41
Yates (Shallow)	.82	5–20–41
Yturria (Sun in S. Texas)	....	....

MICHIGAN PRICES

Central (Basin):		
Porter, Greendale, Crystal, Wise, Midland, Vernon, Saginaw	$1.44	5–27–41
Buckeye, Edenville, Bentley, Beaverton, Monitor, Kawkawlin	1.42	5–27–41
Freeman, Lincoln, Sherman Redding, Temple, Winterfield, Trenton-Monroe Co., Fork Tws.-Mecosta Co.	1.39	5–27–41
Hamilton-Grout	1.29	5–27–41
Adams	1.27	6– 1–41
Arenac, Clayton, Ogemaw, W. Branch	1.24	5–27–41
Southwest (Shallow):		
Traverse, crude in Allegan, Kent, Ottawa, Van Buren Counties	1.45	6– 2–41
Clare	1.11	5–27–41

MIDDLE WEST PRICES

FIELD—	Flat Price	Date Posted
Lima, Ohio-Ind.	$1.50†	10–28–42
Illinois Basin (Sohio Corp.)	1.37	5–19–41
Lake Centralia-Salem, Illinois	1.37	5–19–41
Eastern Ill.-Western Ind.	1.22	5–21–41
Western Kentucky	1.32	5–21–41
Birk City, Western Kentucky	1.32	5–21–41
Kentucky River, Eastern Ky.	1.43	6–19–41
Big Sandy River, Eastern Ky.	1.38	6–19–41
Cleveland, Lodi, Chatham, Ohio	1.30	9– 1–41

ROCKY MOUNTAIN STATES PRICES

Colorado:		
Canon City and Florence	$1.05	5–21–41
Iles	1.07	5–20–41
Montana:		
Cat Creek	1.15	4– 1–41
Cut Bank (6 Buyers)*	1.05-1.20	3–30–42
Dry Creek	1.02	5–20–41
Sunburst	1.00	5–20–41
New Mexico:		
Artesia	.94	5–21–41
Hogback	1.00	10–11–38
Wyoming:		
Big Muddy	1.08	5–30–41
Byron	.55	10–11–38
Elk Basin	1.00	5–21–41
Frannie, Light	.70	5–20–41
Frannie, Heavy	.47	5–20–41
Garland	.50	10–11–38
Grass Creek, Light	1.00	5– 1–41
Grass Creek, Heavy	.50	5–20–41
Hamilton Dome	.45	5–20–41
Lance Creek (Ohio Oil Co.)	1.12	7– 1–41
Mill Creek	.72	10–11–38
Oregon Basin	.40	4–20–40
Osage	1.30	10–11–38
Poison Spider	.59	10–11–38
Rock River	1.15	5–21–41
Tensleep	.6785	5–20–41

*About 25% of Cut Bank crude brings $1.20 per barrel; 65% less than $1.20 and minimum $1.10; and 10% less than $1.10.

†$1.50-price applies to about ¾ of field's production; $1.60 to ¼ of it.

U. S. Field Operations

Illinois Basin

Phillipstown Well Shows For Largest Recent Producer

Wildcats in Richland, Wayne and White counties expected to open new productive areas. First McClosky producer in Wabash County pool flows after an acid treatment. Largest Illinois' producer in many months is nearing completion in Phillipstown pool, White County. Preparations made to acidize Christian County discovery.

Richland County: The Pure Oil Company's Earnst 1, N½ NW 31-3n-9e, a wildcat 1 mile southwest of the South Noble field, was bailing with 260 feet of oil in the hole. Casing was set at 2982 feet after 600 feet of oil was recovered in an hour's drill-stem test of McClosky lime at 2990-93 feet. Total depth is 3005 feet.

Wayne County: Romine's Kinney 1, NE SE NE 18-1s-8e, a wildcat 2 miles south of the Mt. Erie field, swabbed 4 barrels of oil an hour following a 20-quart shot of nitro in Aux Vases sand at 3134-44 feet. Before the shot the well swabbed 60 barrels of oil in 8 hours.

White County: A production test was under way at N. V. Duncan's Metcalf 1, SW SW SE 31-3s-14w, 2½ miles southwest of Grayville, a prospective pool opener. Ten feet of Benoist sand is being tested. On an hour's drill-stem test, 450 feet of oil was recovered.

Superior Oil Company's Speck 1, SW NW SW 31-4s-14w, Phillipstown pool, swabbed 1445 barrels of oil in 24 hours from 2356 feet. The well, largest producer drilled in the state for several months, is producing from three sand formations: Clore, Degonia and Tar Springs.

Wabash County: Magnolia Petroleum Company's Newkirk 1, NE NW NE 34-1n-13w, first McClosky producers in the Friendsville pool, flowed 9 barrels of oil an hour after a 1000-gallon acid treatment in pay at 2622-38 feet. The well is southwest of other production in the area. Previous production in the field has been limited to Biehl, Cypress and Benoist sands.

Clay County: The Texas Co.'s Birch 1, SE SE NE 16-5n-5e, swabbed 60 barrels of oil in 24 hours from Aux Vases sand at 2367 feet to extend the Iola field a half mile west.

The Texas Co.'s Kidwell 4, an Iola pool well, NE SE NW 15-5n-5e, was cleaning out 20 feet off bottom but swabbed 288 barrels of oil in 24 hours from Benoist and Aux Vases sands to indicate it probably will make one of the area's best producers. Total depth is 2306 feet.

Christian County: W. H. Marlow's Ralph 1, SE NE NE 27-15n-2w, pool-opening Devonian well 22 miles southeast of Springfield, is to be acidized after swabbing between 2 and 3 barrels an hour from pay at 1905-08 feet. Several other tests are contemplated in the area.

Kentucky

Henderson County: Carter Oil Company's Denton 1, NE NW SW 21-O-23, wildcat 10 miles from nearest production and 3 miles west of Robards, was swabbing 8 barrels an hour from Benoist sand at 2356-64 feet, after a 20-quart shot. It made 149 barrels of oil in the first 8-hour swab test. Parker Drilling Company was contractor. Denton 2, 1320 feet north of Denton 1, is drilling at 1500 feet; and Jennie Denton 1, 780 feet southwest of the discovery well, has set surface casing.

Carter Oil Company's Barrett 1, NE NE NE 25-P-25, wildcat 3 miles east on Anthoston, bailed 8 gallons of oil and no water in one hour after cement squeeze on Benoist at 2188-89 feet.

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Oklahoma

Good Producer Extends East Watchorn Production

Sunray Oil Company and Phillips Petroleum Company's Travers 2, SWc 25-23-3e, southwest of production at East Watchorn, Shawnee County, is showing for a large well. Wilcox with good saturation and porosity was logged at 3925-40, after Oswego lime, Layton, Cleveland and Bartlesville sands had revealed shows, the latter probably sufficient for production.

Osage County: Bowers Oil Company and A. G. Oliphant's Osage 1, NEc SW 20-25-3e, is to test a seismic high. Location is 20 miles north of East Watchorn, and hole will be carried to Arbuckle if nothing above is encountered.

Cleveland County: Falcon-Seaboard Oil Company's Fee 1, C NW SE 10-10-1e, is a location on a narrow anticlinal trend, and proposes to test Wilcox sand. Previous wells on this trend have not found more than light stains in Wilcox, but some shows have been encountered in Hunton and in the second 10 feet of Viola.

Pottawatomie County: Deep Rock Oil Corporation has made location for the third test in the new Shawnee Lake area, with Baker 1, NW NE SE 24-10-2e. It will test Wilcox sand expected around 5900 feet. Location is 3½ miles northeast of Stanolind Oil & Gas Company's Bleeker 1, pool opener, to which pipe line is being built.

Kansas

Two New Fields, Two Wildcats Announced

Two new fields were added, two important wildcat locations announced, and a recent discovery was given a maximum potential rating during the week.

Russell County: Magnolia Petroleum Company's Trapp 1, C SE NE 31-14-12w, adjacent to Sellens field, indicates a new Arbuckle lime pool, having established a temporary potential of 65 barrels. Top of dolomite was called at 3174 feet, and 2 feet in the formation oil began rising in the hole. Casing was set 1 foot off bottom.

Cowley County: E. E. Wakefield's O'Neil 1, C NE NE 27-32-3e, has produced 11 barrels per hour from top of Arbuckle lime, to indicate a new field. Mississippi lime was encountered at 3135 feet and Arbuckle at 3440 to 3444 feet.

Pratt County: Shell Oil Company's Miskeman 1, SW NW NE 32-26-12w, south of Hollow Drilling Company's recent 3000-barrel discovery, is a location to test Arbuckle, the stratum producing in the discovery.

Osborne County: The Carter Oil Company has staked a wildcat, Neuschwanger 1, C NE SW 15-8-14w.

Saline County: Deep Rock Oil Corporation's Hunter 1, NE NW SW 20-16-1w, which opened a field in Mississippi lime, has been given maximum potential of 3000 barrels daily.

West Texas

Pecos County Wildcat Makes Heavy Gas Flow

Pecos County wildcat yields big gas flow while awaiting orders after testing dry in Pre-Permian zone. Pipe set for completion try by Andrews County wildcat. Enlarged operations due in Embar and Barnhart deep areas. Slaughter field outpost is dry in Clear Fork.

Pecos County: Anderson - Prichard Oil Corporation's Masterson - Humble 1-A, C SW SW T&StL 24, Block 140, 3¼ miles south by east of the Apco deep pool, blew in with estimated flow of 20,000,000 feet of gas daily within a few hours after drill-stem test at 4460-4664 feet yielded rotary fluid without show. This wildcat logged base of Permian at 4470 feet and a short Cambrian section before entering granite at 4563½ feet, elevation 2553 feet. Source of the gas has not been determined, although production was mudded off to run electrical formation survey. Magnolia Petroleum Company's Eaton 1-29, 5 miles southwest of Abell field, logged broken chert at 5410-5760 feet, elevation 2430 feet, and was drilling at 5890 feet, possibly in Simpson. In logging base of Permian at 5410 feet it is 284 feet low to an Ellenburger failure situated 2 miles east by south, while the cherty Montoya section indicates the new test has encountered a faulted condition, else

unusual sedimentation on the flank of an Ellenburger ridge. Phillips Petroleum Company's Price 1, southeastern Pecos County, was drilling shale and sand at 8780 feet.

Andrews County: DeKalb Agricultural Association's Means 1, 3 miles southwest of Means field and considerably lower structurally, cemented 5½-inch on top of broken oil saturation at 4830-85 feet to try for completion. This wildcat is credited with entering San Andres at 4858 feet with elevation of 3175 feet. Phillips Petroleum Company is starting University 38 and 39, both within the Ellenburger producing sector of the Embar field. Company's University-Andrews 20 and 28 failed to produce in the 6200-foot Clear Fork, and are deepening to Ellenburger.

Reagan County: Amerada Petroleum Corporation's University 1-R-K, ½ mile west of the discovery and the highest well on north side of Barnhart field, flowed 155 barrels of oil natural in 21 hours through ½-inch choke from Ellenburger perforations at 8968-9027 feet, and will be acidized. The company is starting University 1-R-P, making the third outpost for the west portion of the structure. R. R. Ogden and R. H. Hawn, with two wells on production, were assigned Tide Water Associated Oil Company and Darby Petroleum Company's 160-acre east offset to the discovery and an 80-acre lease in same section, with the latter retaining 3/16 over-ride. An immediate test on each lease is scheduled.

Hockley County: Jerry Hawkins et al's Mallet 57-A, 1⅛ miles north of production in the Slaughter field, reached contract depth at 6505 feet without shows in Clear Fork, and will be plugged back to complete in regular field zone at 4910-94 feet. Hawkins et al's Mallet 14-B, 1¼ miles north by west of this deep test, is awaiting machine to drill plugs and test promising oil saturation at 4849-4929 feet.

Gaines County: Shell Oil Company's Leaverton 1, Clear Fork discovery 4 miles southwest of Wasson field, pumped 196 barrels of 33.5-gravity oil initial, showing only 3/10 of 1 percent bs&w. On later gauges the well flowed heads when pumping was temporarily halted. Production is from Clear Fork at 7480-7772 feet. Total of 16,500 gallons of acid was used.

Sterling County: Ohio Oil Company's Clark 1 was drilling dolomite and chert at 7815 feet, and Col-Tex Refining Company's Reed 1, also an Ordovician prospect, was drilling lime and shale at 7025 feet.

North Texas

Hildreth Discovery Offset Has Oil in Higher Sand

Second test for Montague County pool develops oil flow from upper pay. Archer County assigned two deep wildcats and a semi-wildcat. Jack County Ellenburger prospect yields water.

Montague County: Continental Oil Company's Hildreth 1-A, southwest offset to its Hildreth pool discovery in Simpson, uncovered shallower pay when the well flowed oil on 10-minute drill-stem test of Bend conglomerate saturation at 6061-6107 feet. Pipe is set to include sand at 5992-6005 feet that also register possible oil production with 500,000 feet of gas daily. Deep explorations in Montague County have declined lately due to numerous strikes within the past two years failing to embrace any appreciable area.

Archer County: Consolidated Oil Company's Garrett 1, John Walker survey, is to explore an Ellenburger prospect in the southeast part of the county. Tom Medders et al's Fuller 1, H&TC 12, Block 1, between Votsberger and Hull-Silk areas, will have the same objective. Medders and W. D. Cline's Vogtsberger 1, Block 2, German Emigration Company survey, will try for southeast extension of Vogtsberger pool's 4700-foot Strawn. Whitaker Oil Company's Coleman 2, 3 miles northeast of Scotland pool, was drilling 5650 feet in Bend, topped at 5434 feet.

Jack County: Shell Oil Company's Wolfe 1, 3½ miles southeast of Jermyn, has been plugged back to perforate Bend after yielding salt water from Ellenburger at 5582-5631 feet.

Young County: Mudge Oil Company's Harrison 11, west offset to its deep discovery in the Knox Mississippian area, registered natural potential of 1200 barrels on ½-inch choke from Mississippian at 4694-4707 feet, being 61 feet high to the discovery. This new well is allowed 100 barrels daily.

East Texas

Coke Field Test Plans Going to 9000 Feet

Coke field assigned a 9000-foot test to explore Lower Trinity series. Dallas County's projected Smackover lime test halted in Paleozoics. Completion of second well in Quitman pool under way, and development to expand to northeast.

Coke Field: Amerada Petroleum Corporation has authorized a 9000-foot test for its Turner lease, John C. Ogden Survey, situated immediately east of Paluxy production, which is virtually defined with the completion of 28 producers and two failures. Amerada's McCreight-French 1, northwest edge, terminated development with flow of 41 barrels natural in 3 hours on ½-inch choke from perforations at 6300-32 feet. Majority of the wells in the field were shut in during January for lack of a market, but a spot sale has been made by Amerada for the delivery of 25 cars to a refinery in Canada. Deal is pending for a term contract that will give the area a pipe line outlet.

Quitman Pool: Shell Oil Company's Goldsmith 1, south offset to the discovery, was trying to free stuck perforater after making 88 shot holes at 6282-6304 feet in the main body of the 67 feet of oil-saturated sand logged in entering Paluxy at 6226 feet and coring to water sand at 6415-32 feet, elevation 458 feet. Shell's Blalock 1, north offset to producer, recorded favorable structural position in logging Georgetown between 5040-55 feet, elevation 459 feet, and drilling to 6010 feet. Delta Drilling Company et al were drilling on east and west offsets to the discovery, and a northeast extension will be sought by Roger Lacy et al's Stone-Johnson 1, 467 feet from west and 1800 feet from south lines of Hazard Anderson Survey. Amerada's initial test is awaiting approval or spacing plan.

Deep Tests: J. F. Lucey and Allen Guiberson, Jr.'s Moyer-Texaco 1, southeastern Dallas County, entered barren Travis Peak at 3575 feet, and quit in Paleozoics at 4455-4504 feet, elevation 366 feet. Another Smackover lime project, involving Bowlen et al's Sims-Shell 1, Bowie County, tied up with stuck stem at 8673 feet, with top of Buckner tentatively set at 8610 feet. In Franklin County, Tide Water and Seaboard Oil Corporation's Bacon 1, Newsome area, was drilling at 4605 feet. A. F. Carter et al's Hazel 1, Van Zandt County, sidetracked junk and was drilling shale in new hole at 5270 feet.

Smith County: Major extension for southwest flank of Chapel Hill field is due to result from Sinclair Prairie Oil Company's Connally 1, Jacob Herrin Survey, awaiting test through 5½-inch at 8165 feet and bottomed in dry Travis Peak at 8337-50 feet, elevation 439 feet. First Pettit porosity was at 8105 feet, with additional porosity at 8210-47 and 8312-27 feet. Company's Smith 2, northeast edge of the field, yielded a small amount water then squeezed off first Pettit porosity. Well flowed 36 barrels of oil and 22 barrels of acid water in 8½ hours through 5/16-inch choke after using acid through lower perforations at 8313-40 and 8344-58 feet. Sinclair Prairie's Swinney 1, which extended the field 2 miles south with a small flow from Pettit, then failed to maintain commercial output, has been abandoned after plugging back for test of Rodessa at 7577-7621 feet with negative results. It is first failure in the Lower Trinity series for the large structure.

Southwest Texas

Jackson County Wildcat Interest Is Spreading

Probably the county to have drawn more interest within the past 12 months from a wildcatting viewpoint is the Jackson area where a number of new fields were discovered in 1942 and where several new wells are drilling or preparing to get under way. The activity is beginning to spread over the entire county with leasing now active near Inez on the Jackson-Victoria County line. Four new wildcats are preparing to drill near the line of these two counties while other drilling deals are reported being worked out.

Jackson-Victoria Area: Great Lakes Carbon Corporation is preparing to drill Wray 1, wildcat 5 miles northwest of Inez in Victoria County on a 320-acre lease in W. W. Nichols survey. Henshaw Bros. are moving rig from Jim Wells County to drill the 4000-foot test on acreage taken from George H. Anderson of Houston.

Rowan & Hope have moved rig to drill Dodd 1, projected 6000-foot Frio wildcat test 6½ miles south of Inez in Victoria County. The well is in block 9, Agapito de Leon grant. Darby Petroleum Company is starting a wildcat 4½ miles southeast of Inez in northeast corner of block 39 of Roseborough Ranch in Fernando de Leon survey. Allen and Morris are contractors on this well and when it is finished, will move

rig to drill Fred W. Shield's Henderson and Pickering 1, wildcat in lot 25 of Roseborough Ranch subdivision of Valentin Garcia grant.

Humble Oil & Refining Company has spudded Isaacson 1, wildcat 5 miles southwest of Edna in Jackson County. This well is projected to 8000 feet, a Frio-Vicksburg sand test, the deepest ever drilled in the area. The well is in El Tora area and is spotted on a 107-acre lease in Carlos Lasso survey.

Guy I. Warren is reported fishing for stuck drill pipe in Kaspar 1, west of discovery well at Mustang Creek, Jackson County, after the well attempted to blow out from 6616 feet in discovery pay. The well is the third in the area, and is located in the southeast corner of a 300-acre lease in William Menefee survey.

DeWitt County: Tide Water Associated Oil Company is reported making further tests in its outpost at Nordheim, ½ mile northeast of Gips 1 discovery. Last perforations were made at 7181-83 feet in Wilcox section, and on a drill-stem test of this level the well flowed at rate of 3,400,000 cubic feet of gas through ¼-inch chokes with 21 barrels of 52.5-gravity distillate per million cubic feet of gas. Total depth is 9506 feet with casing set to 8500 feet. This well is reported to run lower structurally than the discovery producer, but a producer is assured.

Texas Gulf Coast

Three Wildcats Staked And More in Prospect

Wildcatting in the coastal belt is showing slight signs of revival with three tests staked while others are in the leasing and trading mill. Although a flurry of wildcat drillings is not expected due to the scarcity of equipment, a steady increase in the number of new tests is expected by most producers. Leading the wildcat parade in the Wilcox zone is a well in San Jacinto County, which is being thoroughly combed for deep prospects since the discovery of production at Mercy early in 1942.

San Jacinto County: Ohio Oil Company is making location for Brewer 1, 10,000-foot Wilcox test four miles north of Cleveland. Footage on this deep test places it 610 feet from the north line and 714 feet from west line of H&TC 101.

Waller County: Humble Oil & Reing Company has spotted Harry Hebert 1, wildcat north of Katy gas field and about one mile east of Stanolind Oil & Gas Company's Pattison 1, current test which has been drawing more than usual interest due to gas and possibly distillate showings so far encountered. Humble's location is on a 160-acre tract in H&TC 113. This field, which lies mainly in Harris County, is due for more development. It already is considered one of the largest gas reserves on the coast, and more wells are being drilled away from production and still proving more acreage. The acreage has been unitized for a cycling program.

Wilcox Trend: Cities Service Oil Company is making a third test on Frank Stephens 1, Wilcox wildcat in Ramsey area of Colorado County. Last perforations were made at 9524-40 feet which flowed small amount of gas. The well previously had 904,000 cubic feet of gas with 13.5 barrels of distillate and 35 barrels of water through 7/16-inch choke from perforations at 10,466-82 feet. The new perforations for the third test will be made at 8960-70 feet in a sand section said to be far more favorable than the two horizons already tested. A fourth sand will be tested even higher in the hole after the third perforations have been tested.

Montgomery County: Although no official gauge has been run, LaGloria Corporation's Grogan-Cochran Lumber 1, Pinehurst area, is credited with flowing at rate of 320 barrels of oil daily with 600,000 cubic feet of gas from perforations at 9700-26 feet in Wilcox. This well, located in A. Prather survey, establishes a new Wilcox field. Total depth is 11,921 feet with liner set to 11,903 feet.

Louisiana Gulf Coast

Ville Platte Extension Try Still Being Tested

Although there are no definite hot spots in the coastal belt, outcome of a well on the northwest side of Ville Platte field is being closely watched as potential opener of new producing area. Meanwhile, some importance attached to the potential productive possibilities of the area is seen with a well being planned on the west side of the field. The field proper produces from the Wilcox sand.

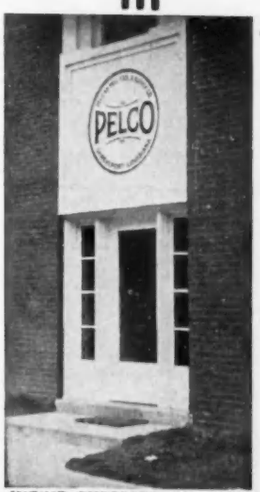
Evangeline Parish: Continental Oil Company is still making production tests on Jaubert Bros. 1, semi-wildcat in northwest extension area of Ville Platte field. Last perforations were made at 10,132-161 feet and swabbing started. Several sands were found showing oil and gas-distillate production. It is reported the test crossed a fault in Cane River section, finding the Haas sand in Sparta at 9016-38 feet, with show of oil. The Tate sand in the Sparta was found at 9192-44 feet, but ran too low for production. Wilcox sand was topped at 9978 feet and showed gas and distillate. Other gas-distillate sands were found at 9994-10,008 feet, 10,010-34 feet, 10,057-109 feet, 10,133-178 feet and 10,-207-45 feet. This extension well was started by Lyle Cummins of Lafayette, Louisiana, but later taken over by Continental Oil Company. The Texas Company owns most of the surrounding acreage.

A semi-wildcat is due to start soon on west side of Ville Platte field, with location expected to be made on a 84-acre tract in SE SE 28-3s-2e. Although not definitely announced, Cummins is credited with making a trade with Continental to drill the test.

St. Landry Parish: J. S. Abercrombie & Company and Atlatl Royalty Company are preparing to drill a 12,000-foot wildcat on the South Leonville prospect. The operators control approximately 16,000 acres in leases in the area, the well being in the middle of the block, falling in Section 23-7s-5e. Location is Charles 1, Unit 2. This prospect has drawn considerable interest in the past two years. It is five miles east of the Shuston prospect where Sun Oil Company is drilling a well and which is

"Seed Money"

Most of us are just now concerned with individual income taxes. Yet the thing we need really worry about is the excess profits tax. Men TRY PELCO FIRST for oil and industrial supplies and equipment because we have reinvested earnings in improved service for 34 years. It is a policy that has been typical of American industry. But what now? What of plastics, planes, electronics and a hungry world if industry reaches the end of this war with no nest egg for conversion and expansion? As individuals we can sacrifice luxuries and many necessities now. We can even sacrifice our savings. But industry, lacking what McGraw-Hill calls "seed money," can hardly furnish jobs for post-war millions nor merchandise for world-wide rehabilitation. And these things, worse luck, are golden eggs no bureaucrat can lay.



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credited with finding gas and distillate sands.

Calcausieu Parish: Union Sulphur Company has staked a wildcat on its acreage in the Gum Cove area. Location is Burton and Calcasieu National Bank 1, C NW NE 24-11s-12w, and is scheduled to be a deep test.

North Louisiana

Sugar Creek Fault Area Presents Drilling Problems

The California Company is moving in to drill Community 1, SW 4-9n-10e, 200 feet west of E. C. Johnston's Brown 1, E½ 4-9n-10e, Concordia Parish, a Sparta sand discovery one mile north of the Lake St. John Wilcox pool. Community 1 will explore Sparta found at 2170 feet in Johnston's discovery and also the Wilcox horizon from which 10 wells are now in production in this field, discovered 8 months ago.

Claiborne Parish: A recently-discovered fault in the Sugar Creek field along the southeast edge is giving operators some drilling problems, but wells now going down along the fault line are being watched closely for some indication of additional flush oil production. The fault was cut first by White & Hinton's Byrd 1, NE NE 18-19n-5w, which was completed on the upthrow side, in a stray gas sand in the Travis Peak at 5802-18 feet, 300 feet higher than normal production in the area. An offset was drilled on the downthrow side and located oil in a new Travis Peak sand. This well was Roy Lee, Trustee's Keen 1, SE SW 7-19n-5w. Despite the fact that the gas sand came in high in the well which cut the fault, operators think the normal oil producing formation may be even higher and much interest is extended to the second well on the upthrow side, Roy Lee, Trustee's Byrd 1, SE NW 17-19n-5w. The latter well, now below 4947 feet, is checking high and operators are looking for a pay zone. The fault is believed to run in a southwest-northeast direction through the southeast edge of the field.

Meantime the north edge of the field apparently had been defined, when Roy Lee, Trustee's Rufus Simms 1, 29-20n-5w, was abandoned at 6251 feet with no commercial shows reported.

Bossier Parish: The British American Producing Company abandoned Blocker 1, NE NW SW 1-22n-13w,, the first Pettit lime prospect on the southwest flank of the old Carterville field. Perhaps twenty wells have been sunk previously near Blocker 1, all exploring for shallow Blossom sand and Travis Peak production. In July 1917, Dallas Oil Company drilled a wildcat, Scovell & Gaines 1, SW NW 22-22n-13w, three miles southwest of Blocker 1, to the Blossom sand horizon, and then blew out and flowed more than 500 barrels per day. Scovell & Gaines 1 was finally put on the pump and deepened to 3052 feet and abandoned in Tokio horizon in December, 1917. In 1923 operators moved to the northwest where the Carterville field is creating current interest in deep Pettit lime and that field was brought into production from Tokio and Blossom sand. A few pumpers still operate in the Carterville field from the Tokio and Blossom sand.

Arkansas

Haynesville Extension Well Makes Good Flow

A second well at Haynesville Extension in Columbia County makes prolific oil flow. Union County wildcats quit Smackover lime and a Calhoun County wildcat passes up Cotton Valley and is drilling in Smackover lime. New gas field in Pope County due a third test; second well deepened.

Columbia County: Navarro Oil Company's Beene 2, NE 10-20s-20w, was regarded to be good for 500 barrels daily. This is the second well for the Haynesville-Extension field which is now extending the general Pettit lime production of the Haynesville field into Arkansas. Official gauge showed 21.4 barrels per hour through a ¼-inch choke from perforations in upper Pettit lime at 5386-5404 feet. Exceptionally good porosity was known to be present at least 15 feet thick in the Pettit lime section and operators reported the well to have checked more than 50 feet higher than Beene 1, SE SW 10-20s-20w, which Navarro Oil Company previously brought into production from the Pettit zone at 5463-78 feet. During first production test of Beene 1, through 1-inch choke, flow was 10 barrels an hour.

Union County: Four miles southeast of the El Dorado field, The Carter Oil Company quit Foyil 1, deep wildcat, NW NW 12-19s-15w. Base of Tokio horizon was at 2958 feet, Travis Peak at 3588 feet and Cotton Valley drilled through at 5340 feet. One core taken in Smackover lime at 7205 feet gave an only indication of a slight trace which was not a commercial show out of 36 sidewall cores operators cut at 3958 feet and extending to 7704 feet before drilling stopped at 7910 feet.

East of the El Dorado field and offsetting Nick Springs shallow Travis Peak production, Fohs Oil Company et al's Grace 1, NW SE 31-17s-14w, plugged back to 5380 feet after salt water flowed at 6700-10 feet. Three favorable sand sections found in Cotton Valley led to test of that horizon. Pipe is set to 5380 feet and further production tests are underway.

Pope County: The new gas area in this county which has now been named Silex field, Arkansas Louisiana Gas Company had 8-inch pipe set at 2980 feet and was drilling below 3439 feet at Millsaps 1,. SW SW 23-10n-21w.

Michigan

Weather Still Restricts Production Developments

Wildcat in Osceola County between Reed City and Evart fields logs oil pay in Traverse limestone but severe weather and heavy snow continues to check operations throughout the state.

Osceola County: Ohio Oil Company's Zimmerman 1, S½ NE SE 28-18n-9w, 7 miles east of Reed City field and same distance west of Evart field, logged Traverse lime at 3224 feet and drilled good gas-oil horizon between 3240-47 feet. After being shut in for 36 hours,

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the well flowed 25 barrels of oil in 15 minutes and carried 1000 feet of oil in open hole with 40 feet of cavings. Production test will be made on this formation although original objective was the Dundee-Monroe horizon.

Missaukee County: Sun Oil Company's State A1, S½ SW NW 11-23n-5w, wildcat, has been idle for six days waiting on setting of a pump jack before continuing production tests in Dundee lime at plug-back depth of 3240 feet. On intermittent production tests this well has swabbed and flowed from 35 to 335 barrels of oil with from 10 to 18 percent water. Pure Oil Company is clearing location for a north offset, Maguire, Inc. is moving in rig on south offset and Sun has a rig on location 1320 feet west of the wildcat.

Clare County—Winterfield: Pure Oil Company acidized Nearhood 1, W½ NW NW 33-20n-6w, with 1000 gallons of acid but it averaged only 2 to 3 barrels per day net oil, pumping the first week after treatment. Abandonment now is probable. This test is over a mile southeast of the company's McClain 1, Section 30, completed last fall at 5060 feet for 250 barrels per day.

Rocky Mountain States

To Make Deep Test In North LaBarge Field

Important deep test to Cretaceous sands starts at North LaBarge field, Wyoming. Two-mile south extension at Pilot Butte, Wyoming, disappointment in Tensleep, completes for gasser in Muddy sand. Wildcat three miles northwest of Pilot gets encouraging shows of oil in upper horizons.

North LaBarge: Wasatch Oil Production Company, affiliate of Wasatch Oil Refining, Salt Lake City, is drilling below 500 feet, after setting 10¾-inch pipe at 471 feet in Government 1-D, SW SE SE 8-27n-113w, which will go to 6000 feet plus to explore possibilities of production in Cretaceous, in LaBarge field, southwestern Wyoming. This test is on acreage purchased by Wasatch from North LaBarge Oil Company, which drilled several wells below Tertiary-Cretaceous contact (oil horizon at LaBarge) to develop sub-surface information, on strength of which this test is being drilled. LaBarge field is connected by pipe line to refineries at Salt Creek, and discovery of deep production of light oil would stimulate a heavy deep drilling campaign to develop oil for refineries at Salt Lake supplying largely war needs.

Pilot Butte Gasser: After plugging back from 6297 feet where it had water in the Tensleep sand, Broderick & Gordon's Fidelity Trust 1, CEL NE SW 27-3n-1w, 2 miles south of deep Tensleep production in the Pilot Butte field, Wyoming, perforated 8⅝-inch between ducing Company's Tribal 1-E, NE NW 3293-3300 feet in Muddy sand, completstantial gas extension to the field.

Steamboat: British-American Oil Producing Company's Tribal 1-E, NE NW NW 5-3n-1w, Steamboat structure, three miles northwest of Pilot Butte, showed 370 feet of oil and 30 feet of mud and water on drill-stem test open 30 minutes in Dakota sand at 4167-78 feet. This test is headed for Tensleep, and has cored some saturation in the Frontier.

California

Demand and Favorable Price Returns Turn Wildcat Interest to Gas Areas

A decided trend towards diversion of exploration effort away from wildcatting for oil in favor of search for gas has developed in California. It is due mainly to belated recognition that nowadays gas development represents a greater profit opportunity than does prospecting for oil.

Wildcatting in areas regarded as exclusively gas prospecting territory is steadily spreading. Major companies in particular are devoting much of their activities to development of the already discovered fields, and to wildcatting in search of more. These include Amerada Petroleum Corporation, Standard Oil Company of California, The Texas Company, Pacific Western Oil Corporation, Richfield Oil Corporation, Superior Oil Company of California and others.

Gas discoveries so far made are predominantly in northern and central counties. Greatest of proven fields, and in fact greater than the aggregate of all others, is Rio Vista, Sacramento County, discovered in 1936 by Amerada. Reserves of this field, already estimated at the impressive total of 3 trillion cubic feet, only last week again were increased by an extension of more than a mile to the south drilled by Standard, and which was brought in with an initial potential of 16,835,000 cubic feet per day.

Amerada's original rich discovery in 1936 gave an impetus to further prospecting, but due to an unsatisfactory gas market during the next few years, interest lagged. Then gas demand spurted forward, to continue right up to the present, with prices rising almost sensationally. Where a price of 3 to 4 cents per thousand cubic feet ruled as recently as 1939, as much as 10 cents per thousand now is being paid, with a minimum in least advantageous situations not lower than 8 cents per thousand.

On a basis of 10 cents per thousand cubic feet it is possible for a good well, such as those at Rio Vista, to pay out in a matter of weeks.

The surprising growth in recent years of California's gas business received scant notice for the reason that the oil industry was too deeply engrossed with oil production, marketing and refining, to pay much heed to a division that previously had been regarded as sort of a poor relation.

Impressive statistics at last are making the operator sit up and take notice. This month, for instance, production reached an all-time peak approximating 900,000,000 cubic feet a day. This climaxes an annual sendout record that has shown a gain in every year since compilation of statistics began.

California's total gas output for 1942, estimated at approximately 255,000,000,000 cubic feet was equal to only a little less than 17 percent of the total of natural gas sales for all the United States.

Butte County: Pacific Western Oil Corporation-George F. Getty's gas test, Cana 1, 11-25-1, in the Cana area, has reached 5600 feet without any gas showings of importance noted.

Fresno County: Shell Oil Company's Shell-Henderson-Standard 66-22, 22-15-15, a test of the deep possibilities of the Tranquility-Henderson area, last week went into the record as the first serious wildcat casualty of 1943. After reaching 12,018 feet without logging any showings of promise it was decided to abandon the hole. McClure was logged at 4900 feet, Kettleman sand 5044 feet, Kreyenhagen 6450 feet, base Kreyenhagen 7130 feet, and Paleocene 7535 feet, with hard gray sand and shale near bottom, with light show of gas.

Standard Oil Company's Pleasant Valley Farms 82-29, 29-20-16, in Guijarral Hills, continues to monopolize attention as the most promising wildcat of the present year. After setting casing above what appeared to be a substantial body of good-looking oil sand, operators are drilling ahead at 9006 feet still in oil sand.

Kern County: The United States Navy has begun operations on Naval Reserve properties in the Elk Hills field designed to help increase the state's dwindling reserves of heavy oil. The initial task will be recompletion of Well 10-E, a depleted 15-year-old producer, to test the interval 3050-2950 feet. The Navy is shutting in all deep-sand production in the Reserve, hoping it can be conserved for distant future needs.

Shell Oil Company last week recorded extensive additional leases from Kern County Land Company of lands adjacent to its large holdings in the Ten Section field. The leases, in 15, 16, 21, 22, 23, 26 and 27 of 30-26, aggregate 2850 acres.

Signal Petroleum Company has leased 800 acres in 24 and 26 of 28-28, and 30-28-29, in the Kern River area, with plans for immediate drilling.

Los Angeles County: The stampede for drill sites inside Los Angeles City limits precipitated by success of Shell Oil Company in obtaining permission to drill its famous "noiseproof-smellproof" wildcat in the Wilshire District, continues unabated. Richfield Oil Corporation has applied for oil zoning of a large area in the San Fernando-Sylmar area. Chris. Schirm has obtained approval for a wildcat on the old Ascot Motor Speedway grounds, 24-1-13. Seaboard Oil Company a few days ago began a campaign to lease up a large block of residential property, to be slant-drilled, in Elysian Park area, northeast Los Angeles. Its objective would be deep sand of the old Los Angeles field.

Santa Barbara County: Bel Air Oil Company's wildcat William 1, 25-9-33, bottomed at 6291 feet, vielded discouraging results in a swabbing test of a showing between 4734-5650 feet, very little fluid, sulphur water and tar spots. Well is standing idle pending decision whether to deepen.

United States Well Completions

CALIFORNIA

Contra Costa County—Jersey: Standard's Jordan Unit 1, 2850 ft s 14 ft w nec projected 29-3-2, flow 16,835,000 gas, ¾-in, 1573/1417 lbs, 128 ft perf 4270 ft, Emigh shale 3633 ft, green sand 4153 ft, white sand 4264 ft, td 4270 ft.

Fresno County—Coalinga Old Field: Shell's 187-26, 993 ft n 332 ft w sec 26-19-15, pump 192 bbls, perf 3410-3580, 3665-3708 ft, black shale 3397 ft, Kreyenhagen shale 3769 ft, td 2782 ft.

Kern County—Belridge South: General Petroleum Corp.'s Marina 61A-3, 713 ft s 2252 ft e w¼c 3-29-21, pump 48 bbls 17.1 gr, perf 666-729, td 1100 ft.

Kern County—Buena Vista Hills: Standard's 33-11D, 441 ft s 1342 ft w nec 11-32-24, pump 33 bbls 27.3-gr, 68 ft perf 3186 ft, td 3190 ft.

Kern County — Fruitvale: Western Gulf's Price & Stewart 1, 22-29-27, Recompletion of old well, flow 89 bbls 19.7 gr, perfs 4405-4420, 4360-4340, 4325-4315, 4300-4285, 4200-4130, 4060-4040, 4020-4005, 3970-3930, 3900-3870, 3840-3820 ft, td 4497 ft.

Kern County—Kern Front: S.M.S. Oil Co.'s 1, 200 ft n 2840 ft w sec 10-28-27, pump 100 bbls, 20 ft perf 2214 ft, td 2214 ft.

Standard's 34, 866 ft n, 343 ft e swc 15-28-27, pump 79 bbls 13.7-gr, 175 ft perf 2529 ft, td 2530 ft.

Westates Petroleum Corp.'s Cauley 40, 2070 ft s, 330 ft e w¼c 16-28-27, pump, no est, td 2962 ft.

Kern County—Midway Sunset: Standard's 18-19D, 326 ft n 1652 ft w sec 19-32-24, flow 140 bbls 24.4-gr, 24/64-in, 45/0, 69 ft perf 2694 ft, td 2698 ft.

Kern County—Mount Poso: Chanslor Canfield Midway Oil Co.'s Mon 19, 1631 ft s 3049 ft e nwc 26-27-28, pump 46 bbls 15.8 gr, 43 ft perf 1518 ft, td 1518 ft.

Kern County—Poso Creek Premier: C. L. Dougan's Atlantic Sesnon 1, 95 ft n, 330 ft w e¼c 17-28-27, pump 85 bbls 15.3 gr, td 2928 feet.

Ohio Oil Co.'s Midway-Premier 13, 2323 ft s, 2900 ft w sec 32-27-27, pump 120 bbls 13.8-gr, 196 ft perf 2800 ft, td 2800 ft.

Kern County — Williams - Antelope Hills: Texas Co.'s Voight 64-6, 330 ft n, 990 ft e c 6-28-20, flow 125 bbls, 27/64-in, 75/220 lbs, 97 ft perf 2295 ft, 23-6 sand 2125 ft, 45-6 sand 2194 ft, td 2300 ft.

CALIFORNIA WILDCATS

Kern County—Failures: Richfield's M & K Fee 1, 33-28-27, in Kern Front area, abnd 3010 ft. Recovery from formation test 2698-2765 gassy fresh water. Top Chanac 2653 ft.

Richfield's Fairfield 5, 11-31-22, Midway-Sunset area, after negative results from test poor oil sand around 1350 ft, abnd 1544 ft, in gray sand and shale.

Solano County—Failure: In 8-4-3 territory adjacent to the great Rio Vista field, Cook 3, 8-4-3, abnd 4452 ft.

ILLINOIS

Clay County: Tide Water's Davis 1, nw sw se 15-5n-5e, Ben 2283-2308 ft, Aux V 2335-52 ft, 203 bbls, 2354 ft.

Texas Co.'s Landwehr 4, se se ne 8-5n-7e, Weiler 2523-25 ft, 2526-34 ft, 60 bbls, 2534 ft.

Texas Co.'s Landwehr 5, se sw nw 9-5n-7e, L. Weiler 2526-38 ft, 100 bbls, 2540 ft.

Franklin County: Shell's C W & F Coal 11, ne nw se 24-6s-2e, TS 2113-27 ft, 30 bbls, 2127 ft.

Hamilton County: Texas Co.'s McGill 4, c s½ 27-6s-6e, gas input well, 3107 ft.

Texas Co.'s Shasteen 2, se se nw 34-6s-6e, Aux V 3105-3122 ft, 128 bbls, 3131 ft.

Pure's St. Clair A-1, se nw sw 18-6s-7e, pb 3125 ft, abnd 3251 ft.

Gulf's Harrawood 1, se nw ne 19-6s-7e, Aux V 3067-78 ft, 48 bbls, 3078 ft.

Jasper County: Pure's Kincaid 1, e½ se ne 13-5n-9e, abnd 2954 ft.

Shulman Bros.' A. King 2, e½ sw sw 7-5n-10e, abnd 2950 ft.

Gulf's Stiff 2, se sw ne 23-5n-10e, McCl 2939-45 ft, 382 bbls, 2951 ft.

Gulf's Stiff 3, se nw ne 23-5n-10e, abnd 3035 ft.

Hunt & Joe Dawson's McClure 1, c nw se 17-6n-10e, Rosiclare 2778-85 ft, McCl 2810-20 ft, 211 bbls, 2825 ft.

Jefferson County: Shell's Howe 2, se sw sw 25-2s-1e, Ben 1974-86 ft, 28 bbls, 1985 ft.

Wabash County: Cecil Kneippe's Price 1, se sw ne 14-1n-12w, abnd 1664 ft.

Sam Malias' C. Potts 1, c n½ n½ sw 26-2n-12w, Biehl sand 1392-1410 ft, 75 bbls, 1411 ft.

Sam Malias' Walker 3, c n½ sw sw 26-2n-12w, abnd 1455 ft.

Sinclair-Wyoming's Majors 2, sw sw nw 2-1s-13w, pb 2385 ft, abnd 2452 ft.

T. W. George et al's Ramsey 1, nw sw nw 2-1s-13w, abnd 2659 ft.

Magnolia's Sturman 2, nw ne ne 10-1s-13w, abnd 2500 ft.

Geo. Schoonmaker's Elliott et al 1, se ne nw 31-2s-13w, abnd 2900 ft.

Wayne County: Pure's Spicer Consol. 1, nw sw sw 8-1s-6e, Aux V 3017-37 ft, 352 bbls, 3037 ft.

White County: Bay Petroleum Co.'s Evans 2, se nw sw 4-4s-14w, Aux V 2787-2802 ft, 90 bbls, 2815 ft.

Jarvis Bros. and Marcell's Cleveland 2, sw ne ne 1-5s-10e, T S 2313-28 ft, 160 bbls, 2328 ft.

Sun's Gardner 9, ne sw nw 6-5s-11e, Clore 2026-38 ft, T S 2288-98 ft, 2330-56 ft, pb 2354 ft, 150 bbls, 2356 ft.

Sun's Gardner 10, sw sw nw 6-5s-11e, Clore 1956-66 ft, T S 2248-58 ft, 2298-2311 ft, 75 bbls, 2311 ft.

Pure's Pyle Consol. 4, nw sw se 18-6s-9e, Weiler 2658-84 ft, Aux V 2940 ft, 30 bbls, 2968 ft.

Pure's Pyle B-2, nw nw nw 20-6s-9e, abnd 3280 ft.

Tide Water's Sission-Higgins 2, sw nw sw 19-6s-11e, T S 2285-2298 ft, 19 bbls, 2298 ft.

ILLINOIS WILDCATS

Effingham County—Failure: H. H. Weinert's Berry 1, nw ne sw 34-8n-5e, abnd 2385 ft.

Madison County—Failure: J. Kesl's Gargac 1, c ne se 12-3n-9w, abnd 1370 ft.

Perry County—Failure: Stanolind's Jackson 1, nw nw se 2-5s-1w, abnd 1755 ft.

Wayne County—Failure: Geo. H. Echols' Goodwin (Shinn) 1, w½ nw sw 10-1s-7e, abnd 3303 ft.

INDIANA

Harrison County: Harrison Development Corp.'s Smith 1, c nw se 32-3s-4e, 60 mcfg, 710 ft.

Posey County: K. R. Bixby, Tr.'s Jacob Klenck 6, se ne nw 23-5s-12w, abnd 750 ft.

INDIANA WILDCATS

Gibson County—Failure: Superior's Lett 1, se nw ne 30-3s-12w, abnd 2790 ft.

Harrison County—Failure: Harrison Development Corp.'s Snider 1, sw sw ne 33-2s-4e, abnd 988 ft.

Wells Completed in the United States in Week Ending February 6, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

STATE OR DISTRICT	FIELD COMPLETIONS: New Wells: Oil	Gas	Distillate	Water Input	Gas Input	Water Disposal	Dry	Total	Old Wells Drilled Deeper: Oil	Gas	Dry	Total	WILDCAT COMPLETIONS: Oil	Gas	Distillate	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama																					2
Arkansas																				7	11
California	12							12	1			1				3	3	16	19	141	102
Colorado																			2	5	
Georgia																					1
Illinois	17				1		11	29								4	4	33	32	214	284
Indiana		1					1	2								2	2	4	3	22	37
Kansas	15						7	22			1	1	2			12	14	37	17	175	213
Kentucky	2	1					1	4										4	3	25	20
Louisiana																		3	11	56	116
North Louisiana																			7	17	
South Louisiana	2	1						3										3	4	39	
Michigan	3							3										3	6	40	82
Mississippi																			2	2	27
Missouri																				1	2
Montana																			22	34	17
Nebraska																					7
New Mexico																3	3	3	2	26	39
New York	11			7				18										18	18	143	131
Ohio	3	7					2	12										12	18	108	136
Oklahoma	3				2		3	8	1			1	1			10	11	20	34	164	209
Pennsylvania	39	4					1	44										44	43	277	328
Tennessee																					1
Texas	35	5	2	1			13	56			2	2	1	2		16	19	77	54	431	919
East Texas	3						1	4								1	1	5	7	24	
North Texas	3			1			9	13			1	1				4	4	18	15	100	
West Central Texas	3						2	5			1	1	1			2	3	9	7	38	
West Texas	11							11								1	1	12	13	89	
Texas Panhandle	5	4						9								1	1	10	2	37	
Gulf Coast, Upper	2						1	3						1			1	4	3	27	
Gulf Coast, Lower	4	1	2					7						1		3	4	11	4	61	
Southwest Texas	3							3								3	3	6	2	48	
South Central Texas	1							1								1	1	2	2	9	
West Virginia	1	9						10										10	9	83	63
Wyoming																			18	25	7
Total United States	143	28	2	8	3		39	223	2		3	5	4	2		50	56	284	313	1,979	2,754

KENTUCKY

Daviess County: J. Ellis et al's Cooper 8, 2-N-31, Bethel 960-63 ft, 1862 mcfg, 963 ft.

Ohio County: W. A. Batten et al's Burdette 6-3, 9-O-33, abnd 795 ft.

Union County: Pure's Kington A-2, 10-O-19, Walt 1804-11 ft, pb 1809 ft, 46 bbls, 2664 ft.

Carter's Clements 1, 16-P-20, Walt 1833-48 ft, 96 bbls, 1848 ft.

KANSAS

Barton County—Kraft-Prusa: Texas Co.'s Janssen 2A, ne nw se 31-16s-11w, conglomerate 3343 ft, 2nd conglomerate 3360 ft, abnd 3373 ft.

Barton County — Merten: Helmerich & Payne's Merten 2, c sw ne 10-19s-15w, Basal sand 3537 ft, pay 3554-60 ft, shot 60 qts, pump 133 bbls, 3565 ft.

Barton County—Susank: Skelly's Deutsch 1, nw se ne 16-16s-13w, Arb 3384 ft, abnd 3392 ft.

Barton County—West Silica: Bay Pet. Co.'s Scheufler 1, se ne se 19-20s-11w, conglomerate 3325 ft, pb 3236 ft, 2500 gal acid, abnd 3374 ft.

Butler County—Ferrell: Table Mesa's Ferrell Ranch 9, sw ne se 21-28s-8e, Miss 2596 ft, 1000 gal acid, pump 12 bbls, 2639 ft.

Ellis County — Bemis: Champlin's Hadley K-3, c e½ sw nw 29-11s-17w, Arb 3447 ft, 4500 gal acid, pump 120 bbls, 3475 ft.

Champlin's Hadley L-1, c e½ se se 30-11s-17w, Arb 3601 ft, 4000 gal acid, pump 600 bbls, 3637 ft.

Ellsworth County—Stoltenberg: Benson Drlg. Co.'s Wamhoff 1, c w½ sw se 26-16s-10w, Arb 3309 ft, 1500 gal acid, 8334 bbls, 3316 ft.

Greenwood County—Beaumont Area: K. T. Weidemann's Baldwin A-1, se se ne 12-27s-8e, Miss 2473 ft, 2000 gal acid, flow 150 bbls, 2486 ft.

Jefferson County—McLouth: Kilness' Schroeder 1, c ne ne 32-9s-20e, Miss 1510 ft, abnd 1520 ft.

Leavenworth County — McLouth: Wilson's Martz 1, c sw nw 22-9s-20e, Miss 1461 ft, abnd 1473 ft.

Marion County—Lost Springs Area: Nelson Drlg. Co.'s Williams 1, c w½ se se 4-17s-4e, Miss 2297 ft, pump 429 bbls, 2320 ft.

McPherson County—Roxbury SE: Westgate Greenland's Crowther B-1, c s½ sw se 22-17s-1w, Miss 2714 ft, pb to 2737 ft, 2000 gal acid, swab 7 bbls fluid hr, 60% wtr, abnd 2753 ft.

McPherson County—SW Lindsborg: Auto-Ordnance's Bean 1, c w½ ne nw 36-17s-4w, Viola 3397 ft, 3000 gal acid, 1915 bbls, 3403½ feet.

Pratt County—Iuka: Skelly's Beck A-3, sw se nw 7-27s-12w, Simp 4223 ft, 1000 gal acid, flow 2515 bbls, 4239 ft.

Skelly's Beck B-1, sw ne se 12-27s-13w, Simp 4275 ft, shot 160 qts, 500 gal acid, pump 41 bbls, 4280½ ft.

Rice County—Chase Area: Derby and E. K. Carey's Link 3, c ne se 19-19s-9w, Arb 3226 ft, pay 3237-41 ft, 1000 gal acid, pump 62 bbls, 3247 ft.

Rice County—Chase: Harwood's Lindquist 1, sw sw nw 30-19s-9w, Arb 3298 ft, abnd 3300 ft.

Rice County — Keesling: Bay Pet. Co.'s Argo-Smith 2, c ne nw 16-20s-9w, Arb 3253 ft, 1500 gal acid, pump 550 bbls oil 2% wtr, 3265 ft.

Russell County—Greenvale: Cities Service's Major B-4, c s½ ne ne 8-15s-12w, Gorham 3244 ft, pump 91 bbls, 3250 ft.

Russell County—Trapp: Skelly's Rein 11, se ne nw 8-15s-13w, Lans 2896 ft, pb to 3151 ft, 4000 gal acid, pump 231 bbls, 3202 ft.

Sedgwick County—Valley Center: Purnty Prod. Co.'s Wright 2, ne nw sw 12-26s-1w, Misener Dolo 3326 ft, 500 gal acid, pump 120 bbls oil, 600 wtr, 3328 ft.

KANSAS WELLS DEEPENED

McPherson County—Ritz Canton: Max Cohen's Oberman 3, se se se 20-19s-1w, otd 2969 ft, chat 2932-60 ft, abnd 3110 ft.

KANSAS WILDCATS

Barton County—Failure: Branine & Holl's Steckel 1, sw sw se 32-19s-12w, Lans 3143 ft, Cong 3384 ft, Arb 3427 ft, abnd 3470 ft.

Barton County—New Field: Palmer Oil Corp. and Mid-Continent's Harrison 1, nw nw ne 18-20s-13w, Topeka 2870 ft, Lans 3232 ft, Congl 3496 ft, Arb 3498 ft, 2500 gals acid, 80 bbls 36.5-gr, 3528 ft.

Ellis County—Failure: Phil-Han Oil Co.'s Kindernecht 1, ne ne ne 8-14s-19w, Anhy 1508 ft, Lans 3550 ft, Arb 3874 ft, abnd 3896 ft.

Marion County—Failure: Westgate-Greenland's Jantz 1, se se ne 21-19s-2e, Lans 1995 ft, Miss 2578 ft, Viola 2984 ft, Simp 3063 ft, Arb 3128 ft, abnd 3157 ft.

McPherson County—Failure: Globe O&R Co.'s Strouse 1, sw sw ne 4-20s-3w, Miss 3136 ft, Viola 3634 ft, Arb 3802 ft, abnd 3807 ft.

Pawnee County—Failure: Stanolind's Holman 1, ne ne se 22-20s-19w, Anhy 1336 ft, Ft. Riley 2400 ft, Topeka 3405 ft, Lans 3730 ft, Base KC 4047 ft, Cherty congl 4199 ft, Viola 4352 ft, Simp 4391 ft, Arb 4412 ft, abnd 4476 ft.

Pratt County—New Field: Hollow Drlg. Co.'s Brown 1-B, sw sw se 29-26s-12w, Lans 3672 ft, Miss 4110 ft, Simp 4188 ft, Arb 4268 ft, 2555 gals acid, 3000 bbls 39.2-gr, 4297½ ft.

Reno County—Failure: Skelly's Potter 1, sw sw ne 29-26s-8w, Lans 3364 ft, Miss 3994 ft, Misener 4284 ft, Viola 4291 ft, Simp sand 4359 ft, Arb 4450 ft, abnd 4460 ft.

Rooks County—Failure: Falcon-Seaboard et al's Chesney 1, c s½ sw nw 8-9s-16w, Topeka 2820 ft, Lans 3067 ft, Cong 3385 ft, Cherty cong 3481 ft, Arb 3502 ft, abnd 3530 ft.

Russell County—Failure: Dickey Oil Co.'s Eulert 1, sw sw nw 26-11s-15w, Anhy 945 ft, Topeka 2700 ft, Dodge 2922 ft, Lans 2995 ft, Arb 3332-35 ft, perf 2730-40 ft, abnd 3340 ft.

Russell County — Failure: Auto Ordnance Corp.'s Sutton 1, sw sw nw 2-12s-15w, Anhy 850 ft, Lans 2942 ft, Base KC 3174 ft, Congl 3206 ft, Simp sand 3267-68 ft, Arb 3268-73 ft, abnd 3310 ft.

Saline County—Failure: Bay Pet. Co.'s Rockhold 1, nw nw nw 20-13s-1w, Lans 1820 ft, Miss 2475 ft, Hunton 2833 ft, Viola 3055 ft, Simp shale 3171 ft, Simp Dol 3180 ft, Simp sand 3208 ft, Arb 3242 ft, abnd 3267 ft.

Saline County—Failure: Max Cohen's Sjo 1, nw nw nw 14-16s-4w, Lans 2323 ft, Miss 2965 ft, Viola 3469 ft, Simp 3613 ft, Arb 3688 ft, abnd 3705 ft.

Wallace County—Failure: Sinclair Prairie's Wallace 2, se se ne 28-11s-39w, abnd 5580 ft.

SOUTH LOUISIANA

St. Charles Parish — Paradis: Sun's Sunset Realty & Planting 8, 4288 ft s, 5706 e ne cor frac sec 8 on unit 152 in sec 38-14s-20e, 7-in 10,400 ft, perf 10,356-380 ft, 292 bbls, 9/64-in, td 10,400 ft.

St. Landry Parish—Port Barre: Bering Oil Co.'s Perkins-Cormier 2, n 8 deg 29 mins e 7381 ft and s 81 deg 31 mins e of sw cor sec 20-6s-5e, perf 6620-32 ft, 164 bbls, ⅛-in, td 6226 ft.

Terrebonne Parish—Lirette: Humble's La-Terre Land 4, c nw nw 34-19s-19e, 7-in 10,547 ft, perf 10,410-50 ft, flow 6,000,000 gas, ¼-in, td 10,545 ft.

MICHIGAN

Bay County—Kawkawlin: Gulf's McNally 1, n½ nw se 28-15n-4e, Dundee lime, pump 36 bbls, 2946 ft.

Gladwin County—South Beaverton: Sun's Oberloier 1, e½ se se 27-17n-2w, Dundee lime, pump 27 bbls, 3894 ft.

Van Buren County—North Bangor: Socony Vacuum's Funk 1, nw se 9-2s-16w, Traverse lime, pump 51 bbls, 1015 ft.

NEW MEXICO WILDCATS

Guadalupe County — Failure: Jack Manley and Hawkins' Agua Negra Ranch 1, 2178 ft from w and 267 ft from n lines 33-8n-21e, elev 4640 ft, abnd 1105 ft.

Hidalgo County—Failure: Harry W. Long and Beck's State-Anderson 1, 350 ft out nec 14-22s-20w, abnd 880 ft.

Sierra County—Failure: Clyde R. Wofford et al's State-Graham 1, c sw sw 8-14s-2w, abnd 507 ft.

NEW YORK

Allegany County: Bradley Prod. Corp.'s Sprague farm, Alma, 8 bbls, Richburg, 1432 ft.

Maple Oil Co.'s Gadsby farm, Bolivar, 7 bbls, Waugh-Porter, 1567 ft.

Putnam Oil Co.'s Cartwright farm, Wirt, 6 bbls, Richburg, 1281 ft.

Ebenezer Oil Co.'s Emerson farm, Scio, 10 bbls, Richburg, 1256 ft.

Otsquago Corp.'s Pike farm, Alma, 8 bbls, Richburg, 1435 ft.

Alfred Oil Co.'s Wyckoff farm, Alma, 6 bbls, Richburg, 1347 ft.

Scio Oil & Gas Co.'s Clark farm, Scio, 5 bbls, Scio, 841 ft.

Messer Oil Co.'s Buena Vista farm, Wellsville, 8 bbls, Scio, 1059 ft.

Wightman & Conklin's Wetherby farm, Wirt, 8 bbls, Richburg, 1372 ft.

C. S. Christman & Son's Cass farm, Wirt, 8 bbls, Richburg, 1377 ft.

Sloan & Zook's Scott-Fay farm, Bolivar, 6 bbls, Waugh-Porter, 1460 ft.

NEW YORK INTAKE WELLS

Allegany County: Mountain Oil Co.'s Kilburg farm, Bolivar, Waugh-Porter, 1570 ft.

Sloan & Zook's Welch farm, Bolivar, Richburg, 1530 ft.

Messer Oil Corp.'s "M," Allen farm, Alma, Richburg, 1369 ft.

Bradley Prod. Corp.'s Norton farm, Alma, Richburg, 1339 ft.

L. H. Thornton et al's Fassett farm, Willing, Fords Brook, 1258 ft.

H. W. Patterson et al's Black farm, Scio, 890 ft.

H. W. Patterson et al's Cleary farm, Scio, Scio, 788 ft.

OHIO

Athens County: Preston Oil Co.'s Sunday Creek 220, 30 bbls, 3645 ft.

Carpenter & Glazier's Edy 1, abnd 141 ft.

Hocking County: Preston Oil Co.'s Sunday Creek 214, 30 bbls, 3465 ft.

Licking County: Midland Oil & Gas Co.'s Cooperider 3, 262,000 gas, 3034 ft.

National Drlg. Co.'s Fischner 1, 135,000 gas, 2815 ft.

Meigs County: Proffitt et al's Holter 5, 120,000 gas, 3377 ft.

Morgan County: Litton & Bradford's Matheny 3, 175,000 gas, 4249 ft.

Ohio Fuel's Knapp 1, 95,000 gas, 1103 ft.

Industrial Gas' Divers 1, 391,000 gas, 4246 feet.

Tuscarawas County: Nat. Gas. W. Va.'s Stewart 1, 33,000 gas, 4734 ft.

Wood County: Hurd Oil Co.'s Haylett 1, abnd 1478 ft.

Jim Braley's Beverstock 1, 2 bbls, 1758 ft.

OKLAHOMA

Caddo County—Cement: Ohio's Rigney 9, sw se se 12-5n-9w, Niles sand 3407-13 ft, pump 200 bbls, 3413 ft.

Creek County—Milfay: Nabob's Snell 1, se sw ne 16-15n-7e, shut down 253 ft.

Creek County—Glen: Gulf's Clayton 30, ne ne se 8-17n-12e, Glen 1562-1722 ft, input well, 1728 ft.

LeFlora County—Unnamed: Western Oklahoma Gas Co.'s Price 1, c ne se 31-9n-24e, Gilcrease 4972 ft, abnd 5525 ft.

Marshall County—Cumberland: Pure's Crissman 104-6, c se ne se 20-5s-7e, McL 5363 ft, sand 5782 ft, flow 256.48 bbls 4 hrs, 1 in, 5895 ft.

Osage County—Avant: Barnsdall's Tribe 20, c n½ sw 17-23n-12e, Bartles 1428 ft, shot 100 qts, pump 4 bbls, 1590 ft.

Pawnee County—E. Watchorn: Champlin's Laird 1, c ne nw 26-23n-3e, Wx 4016-21 ft, abnd 4021 ft.

Tulsa County—Keystone District: Johnson O&R Co.'s Jackson 1, extreme se corner se 19-19n-10e, Red Fork 2200-34 ft, repressure well, 2234 ft.

OKLAHOMA WELLS DEEPENED

Seminole County — E. Earlsboro: Sinclair Prairie's Hopper 2, nw nw se 19-19n-6e, otd 4163 ft, Wx 4090 ft, shot 10 qts 4195-4205 ft, pump 21 bbls, 4205 ft.

OKLAHOMA

Creek County—Failure: Seis. Service Corp.'s Belford 1, nw sw se 26-15n10e, Osw 1495 ft, Glen sand 2054-2200 ft, Miss 2705 ft, Wood 2970 ft, Mise 2993 ft, Viola 3052 ft, Dol 3077 ft, Wx 3090 ft, abnd 3090 ft.

Kay County—Failure: Norbla and Mid-Continent's Burgett 1, se se se 25-27n-4e, Big lime 2735 ft, Avant 2060 ft, Dewey 2270 ft, Hogs 2460 ft, Lay 2510 ft, Ccb 2635 ft, Big lime 2740 ft, Osw 2856 ft, Skinner 2995 ft, Burgess 3091 ft, abnd 3106 ft.

Logan County—Failure: Keener O&G Co.'s Anderson 1, ne sw ne 28-15n-1e, Lec 2140 ft, Hoover 2210 ft, Avant 3275 ft, Hogs 3835 ft, Lay zone 3849 ft, Ccb 3910 ft, Cleve 4098 ft, Osw 4641 ft, Prue 4749 ft, Wood 5062 ft, Hunton 5075 ft, Syl 5170 ft, Vienna 5278 ft, Dense 5303 ft, Dol 5364 ft, 1st Wx 5440 ft, 2nd Wx 5528 ft, abnd 5567 ft.

Pawnee County—Failure: Wood Oil Co.'s Gilbert 1, sw sw ne 30-23n-3e, Avant 2295 ft, Lay 2723-2835 ft, Big lime 3180 ft, Osw 3310 ft, Miss 3843 ft, Wood 4135 ft, Vienna 4155 ft, Dol 4165 ft, Wx 4178-81 ft, abnd 4220 ft.

Payne County—Failure: Lewis Prod. Co.'s Turk 1, se se sw 8-18n-1w, Paw 2285 ft, Oread 2685 ft, Avant 3530 ft, Dewey 3615 ft, Perry gas 3706 ft, Ccb 4465 ft, Osw 4675 ft, pink lime 5020 ft, Viola 5449 ft, Wx 5542 ft, abnd 5542 ft.

Starr & Kubat's Hesser 1, nw nw se 27-20n-3e, Avant 2375 ft, Dewey 2630 ft, Hogs 2910 ft, Ccb 3290 ft, Osw 3520 ft, Bart 3905-75 ft, Miss 4150 ft, Viola 4376 ft, Wx 4448 ft, 2nd Wx 4495 ft, abnd 4500 ft.

Pottawatomie County—Failure: Mid-Continent's Fromuth 1, c se ne 21-8n-3e, Paw 1660 ft, Belle City 2660 ft, Checker 3390 ft, Mayes 4470 ft, Wood 4505 ft, Mise 4563 ft, Hunton chert 4567 ft, Hunton 4580 ft, Syl 4875 ft, Viola 4985 ft, 2000 gal acid, swab 65 bbls oil, 14 wtr, abnd 4995 ft.

Pottawatomie County—New Field: Kerlyn and Continental's Weaver 1, nw ne ne 32-8n-3e, Paw 1755 ft, Belle City 2820 ft, Hogs 3230 ft, Ccb 4560 ft, Earls 4540 ft, Base Penn and Wood 4610 ft, Hunton chert 4669 ft, Syl 4975 ft, Viola 5080 ft, Dense 5180 ft, Dol 5200 ft, 1st Wx 5222 ft, 2nd Wx 5405 ft, flow 616 bbls, ¾-in, 5451 ft.

Stephens County—Failure: Carl Carter's Ford 1, se se ne 24-1n-6w, abnd 450 ft.

Carl Carter's Pogue 1, c ne ne ne 32-1s-5w, abnd 800 ft.

OKLAHOMA WELL DEEPENED

Marshall County — Failure: Colbert & Marshall's Burris 1, c se se se 4-6s-6e, otd 2974 ft, Penn sand 3210 ft, broken sand 3252-82 ft, abnd 3794 ft.

PENNSYLVANIA

Greene County: W. J. Moore et al's Braden 2, 351,000 gas, 2846 ft.

Indiana County: People's Nat. Gas Co.'s Bowman 1, abnd 3850 ft.

T. W. Phillips Gas & Oil Co.'s Hart 1, 7,000,000 gas, 1984 ft.

Westmoreland County: Peoples Nat. Gas Co.'s George 1, 22,000 gas, 4351 ft.

Peoples Nat. Gas Co.'s Garmariengo 1, 77,000 gas, 3228 ft.

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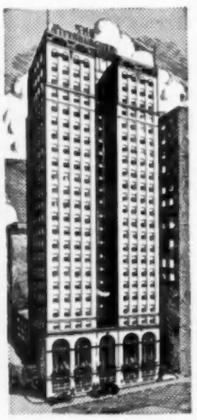

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UNITED STATES WELL COMPLETIONS

TEXAS GULF COAST

Brazoria County—Old Ocean: Harrison & Abercrombie's Richardson 1, 80-ac unit, Berry & Williams sur, 660 ft fr e & 925 ft fr nl of unit, 7-in 11,035 ft, perf, flow 584 bbls, ¼-in, td 11,035 ft.

Chambers County — Oyster Bayou: Sun's Middleton 4, 1828 ft fr wl & 3108 ft fr sl TNO 122, 656-ac tr, abnd 8604 ft.

San Jacinto County—Mercy: Shell's Dunnam 4, 1740 ft fr se & 690 ft fr swl of J. R. Richardson sur, 673-ac tr, 5½-in 8265 ft, perf, flow 143 bbls, ½-in, td 8288 ft.

TEXAS GULF COAST WILDCATS

Wharton County—Discovery: Continental's Allenson 1, 990 ft s&w of ne cor WCRR 41, 334-ac lse, 7-in 4430 ft, perf 4163½-66 ft, flow 2,250,000 gas, ¼-in, td 5523 ft. Opens gas field.

EAST TEXAS

Limestone County—Tehuacana: Zephyr Oil Co.'s Peeples 2-B, 3807 ft from n and 758 ft from e lines 1159-ac tr, Rox Scott sur, elev 512 ft, Woodbine 2715 ft, Georgetown 2980 ft, Edwards 3350 ft, Glen Rose 3723 ft, anhydrite 3940 ft, Pettit 5024 ft, abnd 5090 ft.

Smith County — Chapel Hill: Sinclair Prairie's Alexander 1, 660 ft from n and 467 ft from w lines H. K. Carson sur, elev 464 ft, massive anhydrite 7267-7523 ft, James 7997 ft, Pettit 8182 ft, Travis Peak 8425 ft, flow 150 bbls, 5/16-in, 13,000 gals acid perf 8307-94 ft, td 8436 ft.

Wood County—Coke: Amerada's McCreight-French 1, 2037 ft from e and 8275 ft from s lines M. T'Barbo sur, elev 486 ft, Georgetown 5090 ft, Paluxy 6299 ft, flow 328 bbls, ½-in, natural, perf 6309-32 ft, td 6336 ft.

Wood County—Hawkins: Humble's Christian 1-D, 1150 ft from w and 1020 ft from n lines J. G. Heard sur, flow 314 bbls, ¼-in, Woodbine perf 4739-56 and 4866-74 ft, td 4879 ft.

EAST TEXAS WILDCAT

Smith County—Failure: B. F. Phillips et al's Kay 1, 660 ft from s and 1228 ft from e lines 211.85-ac tr, Oscar Hawkins sur, elev 396 ft, Pecan 2724-3170 ft, Austin 3640-3820 ft, Woodbine 3864 ft, Georgetown 4215 ft, base Goodland 5460 ft, Glen Rose 5780 ft, abnd 5812 ft.

NORTH TEXAS

Archer County: Cato Oil Co.'s Cowan 4-A, 150 ft from s and 210 ft from e lines nw¼ blk 62, Jefferson CSL, abnd 856 ft.

C. W. Clark et al's Kunkel 1, sec 12, I. Holeman sur A-162, abnd 1306 ft.

Grace & Grace's Wear 2, 330 ft from w and 990 ft from s lines lot 8, Crawford subdiv, abnd 1322 ft.

H. A. Rathke et al's Rogers 2, 933 ft from n and 30 ft from e lines TE&L 1596, abnd 1296 ft.

Clay County—Watson: Republic Natural Gas Co.'s Gates-Conoco 1, 660 ft from w and 760 ft from s lines T. Toby-J. Scott sur, Bend 5256 ft, abnd 5537 ft.

Clay County: Metzner & Anderson's Thornberry 1, 330 ft from nw and 990 ft from ne lines lot 11, Thornberry sur, abnd 1206 ft.

Cooke County: Campbell Oil Co.'s Campbell 1-B, 1890 ft from w and 330 ft from n lines s-714½-ac of e-1343½-ac of O. F. Leverett sur, abnd 804 ft.

Jack County — Boyd: Taubert-McKee-Sinclair Prairie's Boyd 2, 3374 ft from n and 660 ft from e lines S. M. Hazel sur, Ellenburger 6270 ft, abnd 6501 ft.

Jack County—Hoefle: Hanlon & Buchanan's Porter 3, 495 ft out sec 176.4-ac tr, J. S. Porter sur, Bend 4818 ft, flow 519 bbls, 14/64-in, acid 3000 gals 4818-70 ft.

Wichita County: Helmerich & Payne's Jackson 1-A, 616 ft out nec blk 16, leag 4, Denton CSL, abnd 1183 ft.

Young County: Chas. King et al's Brown 6, 3375 ft from w and 4800 ft from n lines S. Tynes sur, pump 9 bbls, sand 538-58 ft, td 559 ft.

A. G. Talbot & Schmitz's Sloan 1, 495 ft out nwc TE&L 2795, pump 170 bbls and 9 bbls water, sand 3497-3507 ft.

NORTH TEXAS WATER DISPOSAL WELL

Montague County—Sanders: Sinclair Prairie's Hill 2, 835 ft from e and 585 ft from s lines blk 115, J. C. Mattison sur, sandy-lime 2168-2216 ft.

NORTH TEXAS WELL DEEPENED

Jack County: Pitzer & West's Warren 1, 850 ft out nec TE&L 2784, oil discovery in 1939, otd 4480 ft, abnd 4554 ft.

NORTH TEXAS

Archer County—Failure: Whitaker Oil Co.'s Coleman 1, 660 ft out nwc sec 25, Coleman subdiv of Brazos CSL, Strawn saturation 3690 ft, jkd 3721 ft.

Cooke County—Failures: Burk Roy. Co.'s Gladney 1, 330 ft out sec 186.6-ac tr, sec 24, Hunt CSL, abnd 2913 ft.

R. G. Dr. Co. et al's Gregory 1, 450 ft from n and 2607 ft from e lines 126½-ac tr and Thos. Toby-Geo. G. Steele sur, 2,400,000 gas (only 700 btu's) perf 1574-1615 ft, td 1670 ft, abnd account quality gas.

Jack County—Failure: Chas. H. Kadane et al's Carter-Shell 1, 330 ft from e and 1200 ft from s lines TE&L 3305, abnd 362 ft.

TEXAS PANHANDLE

Carson County: Skelly's Schafer 167, 440 ft from s and 2200 ft from e lines I&GN 196, blk 3, pump 481 bbls, shot 510 qts 3094-3185 ft, td 3190 ft.

Gray County: Texas Co.'s Benedict 5, 1942 ft from s and 1905 ft from e lines H&GN 55, blk B-2, pump 256 bbls, shot 370 qts 2885-3010 ft.

Hutchinson County: Holt Bros.' Whittenburg 3-A, nwc n½ nw BS&F 15, blk XO2, pump 45 bbls, shot 560 qts 2931-3041 ft, td 3047 ft.

C. J. Oates et al's Starnes 7, 3300 ft from n and 3950 ft from e lines T. C. Ry. 24, blk M-23, pump 69 bbls, shot 1024 qts 3045-3172 ft.

Phillips' Whittenburg 65, 990 ft from e and 4788 ft from s lines H&TC 65, blk 46, pump 129 bbls, plus 86 bbls water, shot 250 qts 2863-2916 ft, td 2920 ft.

Moore County: Phillips' Anthony (Knapp) 1, 2495 ft out swc H&TC 269, blk 44, 14,900,000 gas, 375 lbs rp, acid 5000 gals 2965-3302 ft.

Phillips' Dillehay-Wynn 1, 2490 ft out sec H&TC 279, blk 44, 30,000,000 gas, 357 lbs rp, acid 4800 gals 3045-3200 ft, td 3340 ft.

Phillips' Kelly-Henkel 1, 2490 ft out sec HT&B 241, blk 3-T, 14,000,000 gas, 384 lbs rp, acid 9000 gals 2848-3192 ft.

Potter County: Canadian River Gas Co.'s Masterson 6-B, c ne G&M 19, blk 3, 106,000,000 gas, 391 lbs rp, 2165-2383 ft.

WEST TEXAS

Andrews County—West Fuhrman: Phillips' University-Tex 1, c nw nw sec 2, blk 10, flow 129 bbls, 14/64-in, acid 5500 gals 4381-4575 ft.

Cochran County—Slaughter: Honolulu's Mallet 2-C, 580 ft out sec lab 1, leag 53, Scurry CSL, flow 276 bbls 2-in, acid 6000 gals 5004-39, td 5049 ft.

Gaines County—Seminole: Mabee O&G Co.'s Austin 3, c se nw WT 190, blk G, flow 552 bbls, ½-in, shot 93 qts 5150-5225 ft.

Hockley County—Slaughter: T. F. Morrow et al's Mallet 15, 580 ft from n and 440 ft from e lines lab 20, leag 48, Edwards CSL, flow 408 bbls, 2-in, acid 12,000 gals 4860-4964 ft.

Pecos County—Lehn: Owen C. Matthews et al's O'Neil 1, 810 ft from se and 1830 ft from sw lines H&GN 74, blk 10, pump 61 bbls, lime 1636-57 ft.

Pecos County—Tobarg: Stanolind's Tobarg 8, 1605 ft from s and 1418 ft from e lines A&B 539, pump 101 bbls, plus 74 bbls water, sand 341-75 ft.

Reagan County—Barnhart: Amerada's University 1-R-J, c nw se sec 4, blk 48, elev 2774 ft, base shale 8986 ft, flow 725 bbls, ½-in, acid 5000 gals, Ellenburger perf 9098-9145 ft, td 9198 ft.

Scurry County—Sharon: R. J. Byrd et al's Wade 1, sw nw se H&TC 141, blk 97, pump 196 bbls, shot 600 qts 2350-2466 ft.

Upton County—McCamey: Trebol Oil Co.'s Ricker 2-B, 2361 ft from ne and 670 ft from se lines sec 6, blk R, E. C. Grooms sur, pump 225 bbls, acid 1500 gals 2360-72 ft.

Winkler County—Keystone: Tide Water As-

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sociated's P'Pool 3, 660 ft from e and 810 ft from s lines PSL 28, blk B-3, flow 288 bbls cas, shot 250 qts 3225-3350 ft.

Yoakum County—Wasson: Drilling & Exploration's Knight-Shell 3-A, c nw nw sec 773, flow 243 bbls, 9/16-in, acid 9000 gals 4985-5248 ft.

WEST TEXAS WILDCAT

Scurry County—Failure: Col-Tex Ref. Co.'s Stewart 1, c sw sw H&TC 211, blk 97, elev 2402 ft, abnd 4005 ft.

WEST CENTRAL TEXAS

Jones County—Avoca: M. J. Delaney's Acsell 1, c se nw BBB&C 191, elev 1516 ft, Palo Pinto 3279 ft, abnd 3284 ft.

Jones County—Wimberly: Fain-McGaha et al's Varner 1, 1080 ft from s and 330 ft from e lines w-30 of n-60 ac, blk 89, DeWitt CSL, elev 1767 ft, abnd 2352 ft.

Jones County—Stith: Jones-Stasney-Groover-Rose's Cannon 2, 330 ft from n and 1157 ft from e lines blk 81, DeWitt CSL, flow 428 bbls ½-in, acid 1000 gals 2318-33 ft.

Shackelford County: C. B. Christie et al's Newell 2, 2975 ft from s and 335 ft from e lines T&P 13, blk 11, pump 8 bbls, shot 25 qts 926-33 ft, td 1051 ft, pb to 940 ft.

Taylor County — View: A. R. Forster and Charter O&G Co.'s First Nat'l (Anson) Bank 1, 500 ft from n and 800 ft from w lines lab 22, leag 120, Guadalupe CSL, flow 125 bbls, 2-in, acid 2250 gals 2330-88 ft, td 2402 ft.

WEST CENTRAL TEXAS WELL DEEPENED

Stephens County—Hill: T. P. Coal & Oil Co.'s Hill 7, acct 1, 280 ft w of e line lse and 3346 ft nw of m/e/se line TE&L 1122, otd 3163 ft, jkd in gas and water 3912 ft.

WEST CENTRAL TEXAS WILDCATS

Coleman County — Failure: J. O. Fox & Son's Powell 1, 2232 ft from w and 330 ft from n lines BBB&C 23, elev 1967 ft, Gardner (Strawn) sand 3160 ft, abnd 3456 ft.

Eastland County—Failure: Kent & Preston's White 1, 1024 ft from e and 170 ft from m/s/s lines W. P. Tindell sur A-696, elev 1548 ft, Bend 2486 ft, abnd 2936 ft.

Shackelford County—Oil Discovery: Roeser-Pendleton, Continental's Cook 3-A-139, 1731 ft from s and 330 ft from w lines ET 139, elev 1783 ft, pump 91 bbls 40-gr. natural, Cook sand 1605-11 ft.

LOWER TEXAS COAST

Jim Wells County—Koopman: Great Lakes Carbon & Coastal Refineries' Wulff 1, 660 ft fr n&wl's 120-ac lse, sec 21, Camada Ranch subdvn, 5½-in 6003 ft, perf 5974-77 ft, dry gas, no gauge, td 6024 ft.

Jim Wells County—LaGloria: LaGloria Operator's Unit 21, 750 ft fr wl & 652 ft fr nl blk 1, center lot 1, 4765-ac unit, 4½-in 7150 ft, perf 5820-55 ft, 5910-45 ft, 5995-6040 ft, 6065-6118 ft, flow gas-distillate, no gauge, td 7402 ft.

Jim Wells County—Seeligson: Magnolia's Seeligson 39, 660 ft fr sl & 15,620 ft fr el Los Jaboncillos gr, west flank, 7-in 6050 ft, sand 5187 ft, perf 5202-05 ft, 132 bbls, 7/64-in, td 6050 ft.

Nueces County — Agua Dulce: Richardson Petroleum Co.'s Union Central 3, 2130 ft fr nl, 810 ft fr el sec 304, 320-ac tr, F. Z. Bishop subdvn, Brayton tract, sands 6793 ft and 6825 ft, perf 6835-45 ft and 6800-15 ft, gas-distillate, no gauge, td 7188 ft.

Jay Simmons' Traybig 1, 467 ft fr n&el's of se¼ of sec 193, F. Z. Bishop Palo Alto subdvn, sand 7083 ft, 5½-in 7115 ft, perf 7083-89 ft, 212 bbls, ¼-in, td 7115 ft.

Nueces County—Richard King: Sun's Brownlee 1, 467 ft fr s&el's of 752-ac tr, sec 2 & 4 of Richard King Farm subdvnset, 5½-in 5640 ft, perf in 5600-ft sand, 182 bbls, ¼-in, td 5650 ft.

San Patricio County—Rooke: Plymouth's Welder 3-E, 1980 ft fr wl, 660 ft fr nl sec 44, Welder Rch subdvn, 7-in 7171 ft, perf 7160-69 ft, 212 bbls, 7/64-in, td 7171 ft.

LOWER TEXAS COAST WILDCAT

Jim Wells County—Discovery: Republic Nat. Gas Co.'s Straube 1, 660 ft fr s & el of w 137-ac tr of 220-ac tr, blk 14, se cor IGN 501, 1 mi w Orange Grove, Vicksburg 4797 ft, 5½-in 4977 ft, perf 4799-4804 ft, flow 1,500,000 gas, spray distillate, 5/64-in, td 5206. Opens gas field.

Jim Wells County—Failure: Southern Mineral's Hawkins & Wallis 1, 11,767 ft alg wl of s 4500-ac tr of ranch fr its sw cor, th 4086 ft e at ra, abnd 6505 ft.

Lavaca County—Failure: Fidelity Oil & Royalty's Sartwelle 1, 660 ft s th 660 ft w fr se cor Hanibal Bonny sur on 1319-ac lse, James Frazier sur, 15 mi se Hallettsville, abnd 9232 ft in Wilcox.

San Patricio County—Failure: Frank Buttram's Cleveland 1, 660 ft fr n&el's of lot 6, L. A. Douglas subdvn, Cleveland Rch, abnd 7007 ft.

SOUTH CENTRAL TEXAS

Caldwell County — Bee Creek: Ralph R. Ogden's Moore 1, 330 ft fr ne & nwl's of 305-ac tr, Jasper Gilbert sur, A-113, 7-in 2251 ft, acidized 200 gals, slotted liner 2243-2325 ft, pump 63 bbls, td 2325 ft.

SOUTH CENTRAL TEXAS WILDCATS

Williamson County—Failure: J. E. Schultz 1, 125-ac lse, Parthenia Coursey Lge, abnd 706 ft.

SOUTHWEST TEXAS

Jim Hogg County — Colorado: Humble's East 5, 1815 ft fr n'ly el of 1091-ac tr, lot 69, subdvn 2, share 3, Las Moretas gr, 4½-in 3193 ft, sand 3196-3204 ft, pump 109 bbls, td 3207 ft.

McMullen County—Failure: Gulf's Nueces Oil Corp.'s Edrington 2-B, 1800 ft fr sl, 467 ft fr wl of AB&M 63, 7-in 2615 ft, sand 2609 ft, perf 2609-10 ft, 55 bbls, 3/16-in, td 2615 ft.

Starr County—North Sun: Sun's Garza 1, 1320 ft fr nl, 467 ft fr el of 70-ac lse, share 10, la Sal Colorado gr, 5½-in 4544 ft, sand 4522 ft, perf 4537-40 ft, 146 bbls, 9/64-in, td 4544 ft.

SOUTHWEST TEXAS WILDCATS

Jim Hogg County—Failure: H. B. Zachry Co.'s East -, 400 ft fr el, 1980 ft fr nl of blk 34, W. P. Allen subdvn, 2 mi e Chaparosa field, abnd 4313 ft.

cMullen County — Failure: Gulf's Nueces Land & Livestock 1, 1 mile n Munson field, 1980 ft fr sel, 660 ft fr swl James McGrain sur, A-322, abnd 7585 ft.

Starr County—Failure: Sun's Guerra 2, 1320 ft fr s'ly wl & 1980 ft fr n'ly nl of 3127-ac tr Las Comitas gr, abnd 4415 ft.

WEST VIRGINIA

Clay County: Virginian Gasoline & Oil Corp.'s Brown, Swann & Goshorn-1328 4 bbls 1680 ft.

Pitts. & W. Va. Gas Corp.'s Elk River 7892, 416,000 gas, 2276 ft.

Jackson County: Howard Bartlett's Simmins 1, 26,000 gas, 5298 ft.

United Fuel Gas Co.'s Shinn 5134, 15 bbls & 846,000 gas, 5321 ft.

United Fuel Gas Co.'s Boggess 5130, 1,831,000 gas, 5058 ft.

Putnam County: Charles Gas Co.'s Harper 1, 152,000 gas, 2270 ft.

Pate Gas Co.'s Tincher & Zerkles 1, 103,000 gas, 2372 ft.

Upshur County: Hanley & Bird's Boyd 1, 350,000 gas, 2291 ft.

Cumberland & Allegany Gas Co.'s Gaynor 329, 75,000 gas, 4242 ft.

Cumberland & Allegany Gas Co.'s Fitzgerald 334, 91,280 gas, 2130 ft.

United States Wildcat Starts

CALIFORNIA

Orange County: Richfield's Weirick 1, 7-6-10, Huntington Beach area, fndn.

J.E.F. Oil Co.'s Larson 1, Stanton area, preparing to spud.

Fresno County: Standard's 61-35, 35-21-15, Jacalitos area, lcn.

Kern County: Chanslor Canfield Midway Oil Co.'s 12-1, 12-28-19, Antelope Hills area, lcn.

Shell's Hopkins Fee 78-31, 31-27-20, also in Antelope Hills area, laying lines.

Monterey County: Columbia Oil Co.'s Vierra 1, 7-13-23, gas test in Moss Landing area, rig.

San Joaquin County: Standard's Blewett Com. 3, Tracy area, rig.

Ventura County: Pacific Western Oil Corp.'s Temescal 17, 4-4-18, Piru area, rig.

ILLINOIS

Franklin County: Sun's Old Ben Coal Co. C-1, nw ne sw 14-6s-1e, lcn.

Seaboard's Dial 1, ne ne 26-6s-4e, lcn.

Hamilton County: J. W. Menhall's S. Murta 1, e½ sw ne 30-4s-7e, dr.

Jefferson County: Falcon Seaboard's Sheppard 1, se se 8-3s-4e, lcn.

St. Clair County: N. W. Whitton's Grossmann 1, ne sw se 24-1s-9w, dr.

INDIANA

Gibson County: Superior's Thompson 1, ne sw nw 25-2s-12w, dr.

Vanderburg County: Greive, Schmidt & Vogelar's Koehlar 1, se nw ne 16-6s-10w, lcn.

KANSAS

Barber County: Olson Oil Co.'s McClain 1, c sw ne 20-31s-11w, lcn.

Barton County: Helmerich & Payne's Roesler 1, se se nw 14-18s-11w, lcn.

Hinkle Oil Co.'s Gunn 1, nw nw se 13-20s-15w, lcn.

Ellis County: Vernon O&G Co. et al's Barrett 1, se ne se 36-16s-14w, spud.

McPherson County: Republic Natural Gas Co.'s Galle 1, se se se 11-18s-1w, lcn.

Palmer Oil Corp.'s Graber 1, sw sw se 35-20s-1w, rur.

Rooks County: Continental's Barry 1-A, ne se se 2-9s-19w, lcn.

KENTUCKY

Henderson County: Harvey Snyder's Stanley 1, se nw nw 9-Q-26, lcn.

SOUTH LOUISIANA

Calcasieu Parish: Union Sulphur's Burton & Calcasieu National Bank, Gum Cove area, cnw se 24-11s-12w, lcn.

MICHIGAN

Osceola County: Bond & Hilliard's Thompson 1, e½ ne nw 3-19n-8w, rig.

NEW MEXICO

Eddy County: W. R. MacKenzie et al's Yates 1, 1980 ft from s and 540 ft from w lines 18-20s-29e, machine.

Lea County: Van S. Welch et al's State-Ayers 1, c se se 36-20s-32e, machine.

McKinley County: Cecil S. Ringle et al's U. S. Gov. 2, se ne ne 30-20n-9w, dr 170 ft.

OKLAHOMA

Garvin County: Kubat et al's Newborn 1, se sw se 14-4n-2e, dk.

Jefferson County: Seitz Comegy's Seay 1, sw nw ne 32-6s-5w, dr 1531 ft.

Osage County: Ben Blubaugh's Osage 1, nw nw nw 2-28n-12e, lcn.

Cities Service's Osage 487, se ne nw 15-23n-10e, Osw 1595 ft, dr 1705 ft.

EAST TEXAS

Freestone County: Carter-Gragg Oil Co.'s Stewart 1, 1864 ft from s and 5250 ft from w lines Jas. James sur, on 467.84-ac lse, 7 mi n Fairfield, sp.

NORTH TEXAS

Wichita County: Grace & Grace's Daniel 1, 700 ft out swc of n-70-ac, lot 2, John Deck sur, A-52, lcn 1600-ft test.

Wilbarger County: C. B. Christie et al's McCrary 1, sw nw se H&TC 64, blk 14, lcn 1900-ft test.

Wise County: L. S. Youngblood-R. L. Foree's Berry 1, 660 ft out nwc 120-ac lse, Edward Stephens sur, lcn 6400-ft test.

Young County: Tolbert Drlg. Co.-Continental's Graham 1, 467 ft out swc TE&L 2398, 2½ mi nw Murray, lcn 4600-ft test.

WEST TEXAS

Andrews County: Skelly's University 1-K, c sw sw sec 28, blk 9, lcn 5500-ft test.

Pecos County: Herbert M. Ogg et al's McKenzie 1, 330 ft out nwc ne¼ of n½ of s½ of w-640-ac GC&SF 17, blk 604, lcn 2200-ft test.

WEST CENTRAL TEXAS

Callahan County: Lane Oil Co.'s McDonald 1, 2063 ft from n and 400 ft from w lines 83½-ac tr in nw part Walter Converse sur 333, lcn for 2000-ft test.

TEXAS PANHANDLE

Oldham County—Failure: Humble's Matador L&C Co. 1-E, 2640 ft from s and 6600 ft from w lines Leag 329, Capitol Lands Sur, elev 3895 ft, granite wash 4270 ft, granite 6280 ft, abnd 6282 ft.

SOUTH CENTRAL TEXAS

Kendall County: C. G. Hamill's Hamill 1, 3000-ac lse, 6 mi sw Boerne, BS&F 873, lcn 3000-ft test.

Milam County: J. C. McKeenhan's Breckenbush 1, 209-ac lse, P. Sapp sur, 4 mi n Rockdale, lcn 1000-ft test.

Travis County: Marts & Beaven's Marcuse 1, 54-ac lse, Peter Harrison sur, 1½ mi sw of Elroy, lcn 1200-ft test.

Marts & Beaven's Red 1, 325-ac lse, William Lewis sur, lcn 1200-ft test.

TEXAS GULF COAST

Trinity County: Butcher-Arthur Company's Morrison 1, 10 mi nw Apple Springs, 60-ac tr, William Watson sur, A-668, lcn 6200-ft test.

Lee County: Superior's Domann 1, Giddings area, 92-ac tr, L. P. Rucker sur, lcn 3500-ft test.

SOUTHWEST TEXAS

Duval County: Dan Auld's Benavides 1, 3 mi nw Hebbronville, 660 ft fr nwl & abt 480 ft fr nel of 700-ac lse, El Mesquite gr, lcn 4000-ft test.

LaSalle County: Quintana's South Texas Syndicate 1-D, 6490 ft fr s, 2010 ft fr wl of 7488-ac tr, IGN 8, 14 mi s Fowlerton, lcn 8500-ft test.

McMullen County: V. G. Schimmel's Atkinson 1, 2 mi ne Loma Alta field, 320-ac lse, Caroline P. Wright sur 94, lcn 3000-ft test.

Letters to the Publisher

How Far?

DEAR SIR:

Just as was your editorial condemning the appointment of Secretary Ickes as Petroleum Coordinator, you are still on the wrong track in your editorial "How Far Can We Go?" of January 18th, in which you assail the talk of leading Americans aimed at post-war world prosperity.

Apparently you are again allowing your dislike for the administration to cloud your vision in not seeing that:

1. Isolationism was a dismal failure. If the administration had not been able to finally have the Neutrality Act amended and the Lend-Lease passed, despite the cries of "war-monger" and "meddler" we would really be in a fix now.

2. Propaganda such as yours sabotaged President Wilson's program and, if persisted in generally, can nullify our efforts in this World War.

3. You write as if the war was won, that we do not need the so-called neutrals. If we had not seen beyond our noses or our country's boundaries, and had ignored all who were not, as you say, "killing Nazis," Hitler would be in South America now, France would have been all-out for Germany and we would not have our present position in North Africa.

4. Obviously, Vice President Wallace is appealing not only to Americans, in what you call a "Santa Claus" policy, but is trying to reach the people of Germany, Italy, France, Spain and all over-run or captured peoples.

5. If free-trade will not be the complete answer to post-war world prosperity, and our standard of living is lowered in the process, at least we can read the Golden Rule with some satisfaction. Also, most of us would prefer a reduced standard of living to the dislocated world economy we have had for the past thirty years, and its consequences.

6. You seem to put "business" and free enterprise on a high pedestal and say that everything was grand until an irresponsible "socialistic" government messed things up. Where were you during the mad twenties, and later when the banks closed?

It would be a fine practice for editorial writers to periodically read their own past editorials in the light of history.

PAUL E. DAUGHERTY,
912 N. Somerville,
Pampa, Texas.

P.S.: Also note first article in January 25 issue of "Time." You have my permission to print this in your very good publication, THE OIL WEEKLY.

MY DEAR MR. DAUGHERTY:

In replying to your letter of January 22, let me remind you that I am fully aware that it is a part of the New Deal stock in trade nowadays to charge as an "isolationist" anyone who opposes any pet scheme which the socialistic minded attachés to the New Deal may cook up. Isolation has nothing to do with the practical problem of paying for a war. Isolation has nothing to do with the crack-pot idea of making the American people into a set of International Santa Clauses.

There is a vast difference between appreciating the place which the United States of America should occupy in world affairs after the war—a participation in international matters in such a way as to protect us as far as possible against the start of world conflagrations which we inevitably must step in and help extinguish and the proposition of starting out to feed the world, nilly willy.

I know of no factor more likely to cause the American people to shrink from active participation in world affairs than the fear that our leaders might make such participation the open door to a change in our form of government or economy, or the fear that it might be made the occasion of such experiments as would leave our own country with only a faint hope of ultimate recovery from the war.

I certainly do realize that the war is not yet won—but I confidently believe that it will be won and have common sense enough to know that it isn't being paid for as we go, but will leave us when won with an unparalleled national debt. I *am* looking beyond my nose—looking into our own food and supply and credit situation—and I see something which New Deal leaders have begun hinting at—a real, not a hypothetical, shortage of food is staring us in the face.

In your 5th "point" you might well have left out "not only to Americans" and have boldly said that this is a propaganda to appease the peoples of the nations against whom we are fighting. For me, I have seen the effect of appeasement and want no more of it. This is no new thought on my part—I had it when both Mr. Roosevelt and Mr. Willkie were soliciting my vote on the basis that they would keep us out of war.

I observe that you may have some doubt of free trade being the panacea for world brotherly love, and that as a substitute you offer the Golden Rule. I believe as firmly as you that world-wide acceptance of the Golden Rule would solve our world problems, but I am more skeptical than you as to the effect of one people adopting it and another people not adopting it and taking advantage of those who base their national safety on it. I cannot forget the war ships we sank during Harding's administration as an offering on the alter of brotherly love and world peace and I thank God that we didn't get down to those destroyers which have been giving yeoman service in helping to keep the supply line open to England.

Mr. Daugherty, I know of no political or social ism which in theory has more to commend itself than socialism, nor do I know of any ism which has failed more to deliver when its people depended upon it.

Which is another way of saying, in answer to your 5th "point" that we have no assurance, not even the shadow of one, that deprivation on our part in favor of other peoples (who have not earned the standard of living we enjoy) will save us from the shadow of future wars.

I do put free enterprise and American industry on a high pedestal. If it had not been for them, Mr. Daugherty, not even you would be proposing that we take on the job of feeding the world, friends and foes alike! In the "mad 20's" to which you refer, I was busily engaged in helping to build a business which today is helping by taxes to pay for this war, and which during the depression gave food and employment to a sizeable number of families. In other words I was one of many who helped to supply the cash without which the New Deal could not have undertaken its many noble experiments.

And now you have been saying to yourself—"He hasn't said a word about his editorial in which he declared that Mr. Ickes was of all the men in the United States, the most unfitted to become Petroleum Coordinator."

I did say that and I would be saying it today were it not for the fact that Mr. Ickes has been apparently a much bigger man than many others in the New Deal, and becoming better acquainted with what the oil business is, and what oil men actually are, has played fair and square with one idea uppermost in his mind—the winning of the war.

RAY L. DUDLEY,
Publisher.

—

DEAR SIR:

In your editorial "How Far Can We Go?" you have so perfectly expressed my feeling and desire about the things so talked of by the knaves in Washington that I wish to commend you for your good sense and better way of expression.

Every Congressman and Senator should have a copy of this editorial. Keep writing this character of editorials and I am sure that they will have some effect on this question.

R.L.W.,
Corsicana, Texas.

—

DEAR SIR:

Please accept my congratulations on your very timely editorial, "How Far Can We Go?" appearing in January 18th issue of THE OIL WEEKLY.

I trust that your article will be reprinted by other publications, in order to give it the publicity it deserves. Every member of Congress should have a copy.

H.W.L.,
Bradford, Pa.

—

DEAR SIR:

Just a word to heartily congratulate you on the Editorial Comment in the issue of the eighteenth. I am sure that it expresses the thought of most thinking citizens.

H.L.S.,
Muskogee, Oklahoma.

—

DEAR SIR:

I read with a great deal of interest your editorial in your current issue of THE OIL WEEKLY, and I think this is a masterpiece; and if there is any way to get this republished in our local papers I think it would be of material benefit to the whole nation.

I wish to congratulate you on your conception of the general state of affairs.

E.C.K.,
Houston, Texas.

Men in the Industry's News

GEORGE D. LINDBERG of Toledo, Ohio, geologist for Sun Oil Company, was elected president of the Michigan Geological Society at the annual meeting. He succeeds Lee C. Lamar of Mt. Pleasant, resident geologist for The Carter Oil Company. Other officers include Edward Baltrsaitis, Gulf Refining Company, Saginaw, vice president, succeeding A. J. Erdler, University of Michigan, Ann Arbor; Mrs. Lucille Esch, State Geological Survey, Lansing, secretary-treasurer, succeeding Baltrsaitis; and William Schulz, Cities Service Oil Company, Mt. Pleasant, business manager, succeeding Gordon Pringle, Ohio Oil Company, Mt. Pleasant.

LEWIS B. KELLUM of the University of Michigan talked on "The Geologic History of North Central Mexico and Its Bearing on Petroleum Exploration" before the Houston Geological Society, February 2.

R. M. PIDGEON, head of the Imperial Oil in British Columbia, has been elected as the new chairman of the transportation and customs bureau of the Vancouver Board of Trade.

A. S. RHEA, engineer for Sun Oil Company, has been transferred from Kilgore to Corpus Christi.

A. N. LUCIE-SMITH, former chief exploitation engineer for Caribbean Petroleum Company at Maracaibo, Venezuela, is visiting the West Texas division of Shell Oil Company, studying methods of acidization and well perforating. He has been in this country since April, visiting various Shell operating districts.

GEORGE W. STRAKE has been appointed chairman of Houston's Brotherhood Week Committee, the observance scheduled for February 21-28.

PAUL HEDRICK, oil editor of The Tulsa Daily World, was the guest of honor at a dinner given him in recognition of twenty years of oil-writing services, by Halliburton Oil Well Cementing Company, on February 3. Hedrick is one of the most widely known oil editors in the United States.

HERBERT R. GALLAGHER, president of Consolidated Oil Corporation, New York, until his retirement from business in 1940, has been appointed director in charge of District 5 PAW office, Deputy Administrator Ralph K. Davies has announced. Gallagher has had long experience in the industry, having been senior vice president of Shell Oil Company in California from 1911 to 1932. He served as chairman of the general committee of Region 1 under NRA and was a member of the Petroleum War Service Board during the last war.

M. C. MORGAN, formerly field service engineer, has been appointed assistant Pittsburgh division sales manager of A. M. Byers Company.

Morgan, who has been with A. M. Byers Company since 1923, will be associated in his new position with H. R. Rowland, division manager.

PHILIP W. METTLING, compressor expert with The Cooper-Bessemer Corporation, Mount Vernon, Ohio, for the past several years, has been transferred to the company's branch office in Los Angeles.

R. R. PILGRIM of The Texas Company has been transferred from the Panhandle district to the West Texas-New Mexico district. M. C. Watkins has been moved from Electra to Crowell field, Texas. Ernest Hudson has been transferred from Electra to Nocona, Texas.

FRANK D. PETERSON, petroleum engineer, has returned from Venezuela and joined The Texas Company's staff at Lafayette, Louisiana. W. W. Vietti of Colombia, has returned to the United States and joined The Texas Company, Houston.

RAYMOND T. NELSON is now on duty as a first lieutenant at Camp Wallace, Texas. During the past six years he served as scout, geologist, and landman for Superior Oil Company in the Corpus Christi district.

WILLIAM H. VAUGHAN, head of recycling operations in the Long Lake and Cayuga fields of East Texas for Tide Water Associated Oil Company, has been transferred to Houston where his duties will embrace recycling operations in Texas and South Louisiana. He was succeeded by Jasper C. Dennis.

COL. JAMES L. WALSH, chairman of the committee for national defense, ASME, speaks before the Mid-Continent chapter of the Association at Tulsa, February 4, on the needs of unified defense effort.

HENRY LANGSPECHT, oil producer, has opened an office at 319 Ritz Building, Tulsa.

DR. ERNEST CLOOS, professor of geology at Johns Hopkins University, addresses Tulsa Geological Society February 1 on "Method of Measuring Distortion of Primary Stratigraphic Thickness Due to Flowing and Folding."

W. T. ZIEGENHAIN, Tulsa, has joined the special products division of Phillips Petroleum Company, Bartlesville.

A. D. WYATT, geological scout for Atlantic Refining Company, Midland, has been chosen president of the West Texas Oil Scouts Association for the thirteenth consecutive year. Carroll Mitchell, Continental Oil Company scout, was elected vice president and head of the lease and

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OIL CITY BRASS WORKS
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geophysical check, while A. A. Jones, Atlantic Pipe Line Company, is new chairman of the pipe line report committee.

A. D. NELSON, tax commissioner of Magnolia Petroleum Company, Dallas, was elected general chairman of the standing committee on state and local taxation of the general Mid-Continent Oil & Gas Association, which held its annual meeting at Fort Worth January 27-28. He succeeds A. J. Wells, tax commissioner for Carter Oil Company, Tulsa. Leo Meyer, Mid-Continent Petroleum Corporation, Tulsa, was chosen vice chairman.

W. C. RAY, San Angelo, Texas, geologist and oil producer, has been commissioned as a captain in the engineering corps of the United States Army, and has reported for duty at Camp Claiborne, Louisiana. He is a veteran of World War I.

JOHN T. LANGLEY, San Antonio district scout for Sun Oil Company, has reported for duty in the United States Army, and will be relieved by J. W. Haymaker, former assistant scout.

S. F. PRATT has been elected general secretary of The Pennsylvania Grade Crude Oil Association, to succeed the late I. E. Moorhead. For eight years Pratt has been identified with the association. He served as European manager for three years prior to the war. Since his return to the United States he has served as assistant executive manager. Since the death of Moorhead in August, 1942, Pratt has been acting as the association's chief executive. W. W. Dunlap, also a member of the association staff for eight years has been named assistant secretary. Both Pratt and Dunlap are residents of Oil City.

J. H. ROSE of Houston was chosen permanent chairman of a committee of Texas and Louisiana oil-field haulers, who met in Fort Worth February 3 to formulate plans for compliance with Office of Defense Transportation's rules governing empty trucks on return trips. W. O. Compton of Fort Worth is co-chairman. Truckers are to reconvene at Fort Worth February 17 to receive reports of district committees.

W. GUS LEEDY, 39, electrical engineer for Big Lake Oil Company, Texon, Texas, died January 27 in a San Angelo hospital after a short illness.

W. C. FRITZ, West Texas consulting geologist the past year and formerly with Skelly Oil Company, and W. T. Hoey, who was with Phillips Petroleum Company, have been employed by National Refining Company, Cleveland, Ohio, which will undertake explorations in West Texas with a district office in the First National Bank building, Midland.

J. EDDIE LEWIS, gauger in charge of Sinclair Refining Company's original gathering system in South Texas, has been promoted to district foreman following completion of the company's trunk line from Corpus Christi to Houston.

CHARLES SOUTHERN, operating engineer for Atlantic Pipe Line Company, Dallas, has resigned to become general superintendent for Trans-Florida Pipe Line Company, which operates the Defense Plant Corporation's products line across Florida.

D. H. LEVY, electrical engineer for Magnolia Pipe Line Company, has been appointed general superintendent of the telephone and telegraph department, succeeding Andy J. Balcom, who retired after 30 years of service.

DAVID P. DEAN, Fort Worth geologist and producing associate of his twin brother, Paul Dean, has been commissioned a captain, United States Army Engineers, reporting for duty at Camp Claiborne. He is a graduate of University of Oklahoma, and served in World War I.

DR. ERNST CLOOS of Johns Hopkins University was scheduled to address the Illinois Geological Society February 8 at Olney on "Method of Measuring Distortion of Primary Stratigraphic Thickness Due to Flowage and Folding." The address is another sponsored by the Distinguished Lecture Committee of the A.A.P.G.

L. A. PUZIN of Schlumberger Well Surveying Company spoke on "Two Electrical Markers of North Texas" and John A. Kay, consulting geologist, spoke on "Reef Building Algae and Their Relation to the Limestone Reefs in North Texas" before the North Texas Geological Society January 29. Dr. George H. Fancher, professor of petroleum engineering at University of Texas, will present a paper on "Water Flooding in North Central Texas," and Jo H. Cable will speak on "Gas Repressuring" at the February 19 meeting.

Squeaks from the Bull Wheel

Tireless

He had taken pains, when he applied for work, to assure the farmer that he never got tired. When his new employer went to the field where he had put the man at work, he found him lolling on his back under a tree.

"What does this mean?" asked the farmer. "I thought you were a man who never got tired?"

"I don't," said the hired man, calmly. "This doesn't tire me."

Fox Holes

A young officer, back on furlough from the Pacific, was the honored guest of a group of friends on his first visit to a spectacular night club, and he was a bit dazed by the display, particularly the elegance of feminine apparel. "Ah," he remarked, casting an appraising eye at neighboring tables, "A silver fox hole!"

Showmanship

The story is told of a visit paid by a delegation from Kansas to Theodore Roosevelt at Oyster Bay.

They were met by the President, whose coat and collar were off.

"Ah, gentlemen," he said, mopping his brow, "I'm delighted to see you. Dee-lighted. But I'm very busy getting in my hay just now. Come down to the barn and we'll talk things over while I work."

The delegation was agreeable, so the host and his visitors wended their way barnward. On reaching their destination, no hay was found waiting to be thrown into the mow.

"James!" shouted the President, calling to his hired man up in the loft, "where is all the hay?"

"I'm sorry, sir," admitted James, "but I just ain't had time to throw it back since you threw it up for yesterday's delegation."

On Sure Ground

A bewildered youngster was wrestling desperately with examination questions. Finally he came to: "State the amount of oil exported from the United States in any one year."

With a sudden inspiration, he wrote: "In 1942, none."

Expert Judgment

A few days after an efficiency expert entered the Army he received a slight cut for which he was sent to the Post Hospital for treatment. As he entered he saw no one, but before him were two doors. One bore the sign "Officers."

Entering the other, he was again greeted by two doors, one with a sign "Non-Comms" and the other "Privates." Through the Private door he went, to find two more doors, one marked "Minor Wounds"; the other "Major Wounds." As his cut was distinctly minor, he went through that door, to find himself once again outside in the company street.

"How did you do?" asked his pal who had been waiting. "Did the doctor fix you up?"

"I didn't see any doctor, but man—they've got a wonderful system."

Paid For

Mary was very poor at rising in the morning, and her mistress thought it was time to stop it.

"Look here," she said sternly, "every time you fail to get up and I have to cook the breakfast I shall deduct a quarter from your wages."

But the very next morning Mary was late again.

"Look at the clock," reprimanded her mistress. "I've had to come down and get the breakfast myself."

"Well, what's all the fuss about?" said the girl airily. "Ain't I paying for it?"

Marksmanship

A raw recruit from the hills made such records at target practice that he was questioned by his officers. Where and how had he gained his skill with the rifle?

"Well," said the mountain youth modestly, "pappy used t' hand me the rifle and one bullet ev'ry mornin' an' say, 'Boy, go out an' git breakfast.' Iffen I missed, we went hongry. So—I ain't missin' much."

Inconsistent

"Mrs. Gray's husband didn't leave her much when he died, did he?"

"No, but he left her often while he was alive."

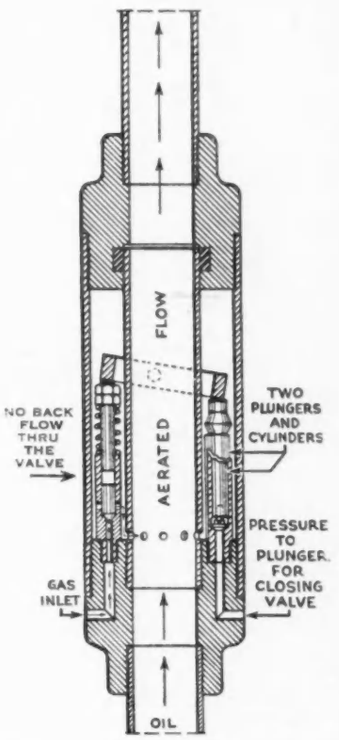
Notes for the Equipment Buyer and User

Flow Valve

L. D. MOWREY & SON

L. D. Mowrey & Son, Wichita Falls, Texas, has announced the Mowrey "Booster Flo" Valve—Type A. It is claimed the valve flows the well on less pressure and is adaptable for wells where pressure is insufficient to kick off and flow. It is said the valve increases flowing efficiency and lengthens the flowing life of a well, allowing the proper amount of gas to enter the tubing to maintain the minimum flowing gas-oil ratio.

The gas inlet is controlled by two pistons that have an approximate 50-to-1 power ratio over the inlet gas valve. The piston ends are in contact with respective pressures inside and outside the flow tubing and a small differential in pressure reciprocates the pistons, thus opening or closing the inlet gas port. Full tubing opening allows bottom-hole pressure recording, bottom-hole choke installation and swabbing.

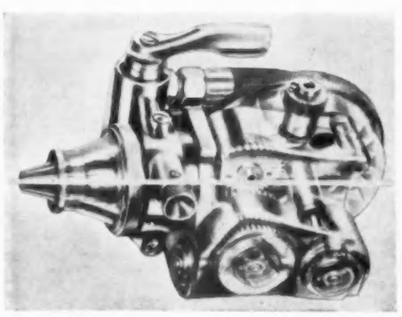


Mowrey Type A

Metallizing Gun

METALLIZING COMPANY OF AMERICA

Metallizing Company of America, Chicago, Illinois, has announced the Model P Mogul metallizing gun, built for use with propane, acetylene or generated gases. The unit has been provided with oversize bearings and the entire gear train arranged to run in grease in the new one-piece case. The gun weighs only 4½ pounds, and may be used for hand spraying or for fixed-tool-post operation. The Model P may be ordered fitted with special aluminum head instead of the standard type for 11-gauge and ⅛-inch wire nozzles.



Phantom view of Model P Mogul Metallizing Gun

Gordon Richmond Heads Houston Chapter of Nomads

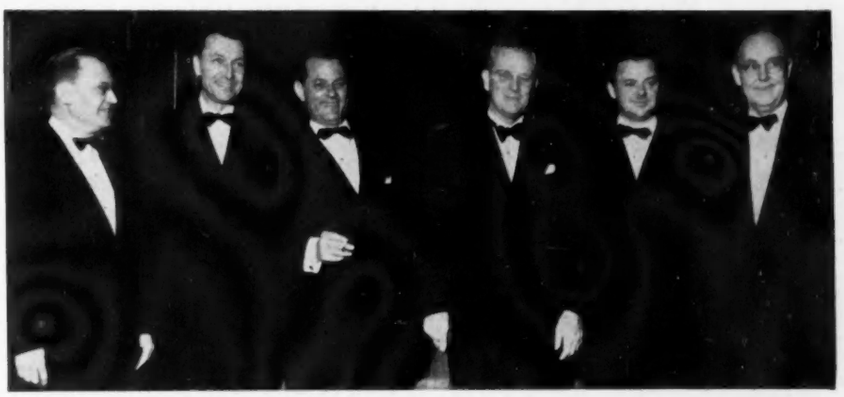
The Houston Chapter of Nomads held its third annual meeting January 29, at the Houston Club, with 140 members and guests in attendance.

New officers elected included: Ray L. Dudley, regent; Gordon Richmond, Regent and president; H. J. Craig, vice president; W. J. Nutto, secretary and treasurer; Carl Vogt, assistant secretary and treasurer; W. A. Davis, sergeant-at-arms, and C. E. Richards, assistant sergeant-at-arms.

Favors in the form of defense stamp corsages were given to all ladies present.

W. C. Norris Gets Army-Navy E Flag

W. C. Norris, Manufacturer, Inc., Tulsa, is the first Oklahoma oil field equipment manufacturer to be awarded the Army-Navy E flag. Presentation was made at the firm's plant at Tulsa, January 26. In recognition of the honor, an invitation was extended local industrialists to participate in the presentation.



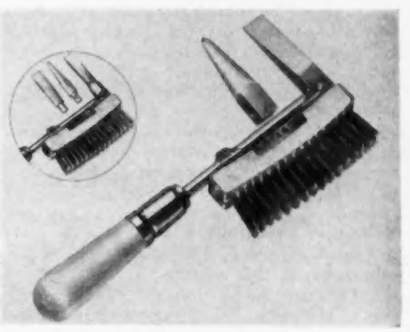
New officers of the Houston Chapter of Nomads. From left to right, W. A. Davis, sergeant-at-arms; H. J. Craig, vice president; C. E. Richards, assistant sergeant-at-arms; Gordon Richmond, president and regent; W. J. Nutto, secretary and treasurer; Ray L. Dudley, regent. Carl Vogt, newly elected assistant secretary and treasurer, was not present.

Cleaning Tool

ATLAS WELDING ACCESSORIES COMPANY

Atlas Welding Accessories Company, 307 Boulevard Building, Detroit, Michigan, has announced a new and improved weld cleaning tool for welders in shipyards, aircraft and tank plants, boiler and sheet metal shops, and for oil pipe line, factory maintenance and general welding work is now being manufactured under the name Dual-Tool.

The Dual-Tool combines a wire bristle brush and a slap-removing bit in one unit and features a specially-developed brush holder which permits removal of brush for reversing or replacement by inserting screw driver or other sharp object at rear end of holder. An up and outward pry releases tension. Brush pops out. Reverse action for inserting and brush snaps in to a firm, rigid seat.



Atlas Cleaning Tool

Every part of the tool is replaceable, and Atlas manufactures a complete line of replacement parts, including interchangeable cone and chisel bits.

Link-Belt Car Spotter Now Available Portable

Link-Belt Company, 2410 West 18th Street, Chicago, has announced that the Link-Belt line of motorized electric car spotters, heretofore furnished only for stationary mounting, is now available also in portable form.

The spotter is so balanced on a chan-

nel iron frame that one man can lift the one end and roll the unit to any desired location.

Operator need but anchor the frame with a chain; plug electric cord into nearest power outlet; hook one end of haulage cable to car or object to be moved; wrap the other end around capstan; turn on the motor; and feed away the cable while the machine does the actual pulling.

Cooper-Bessemer Reports Boost in Engine Output

Increases in production to meet government schedules have been steadily maintained throughout the year, according to Gordon Lefebvre, vice president and general manager of The Cooper-Bessemer Corporation with plants at Mt. Vernon, Ohio, and Grove City, Pennsylvania.

Although the industry has been faced with critical shortages in both materials and manpower, company officials credit record-breaking production to intensified research, far-reaching shop training plans, and exceptional spirit and enthusiasm among both factory and office personnel.

At Mt. Vernon, the engine erectors were said to have reached a 98 percent efficiency record based on a five point program of job instruction, specialization, cooperation, better material follow-up, and a system for eliminating production difficulties by correcting work stoppages at the source.

Under the same general plan, workers on the erecting floor at the Grove City plant boosted their efficiency 18 percent higher than it has been at any time in the previous five months.

Production of castings for the past nine-month period at the Grove City plant has practically equalled their entire output for the previous 12-month period.

Beaver Pipe Tools Elects Officers

At a meeting of the board of directors recently, a number of changes were made in the list of top operating officials of Beaver Pipe Tools, Inc., Warren, Ohio.

W. A. Neracher, founder of the company 43 years ago and president during this entire period, was elected to a newly created position as chairman of the board. W. A. Phillis, formerly vice president, becomes president and general manager; M. W. Bechtel, executive vice president and treasurer; C. W. Shafer, vice president, manufacturing; E. R. Barkley, vice president, sales; and R. C. Mellinger, vice president, accounting.

Circuit Breakers

Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania, has issued a 40-page booklet showing the complete line of Nofuze "De-ion" circuit breakers for lighting, distribution and power circuits up to 600 amperes.

"De-ion" breakers are available for panelboards, switchboards, built-in applications, individual mountings and separate enclosures. In this booklet principles of the "De-ion" arc quenching action are explained, and quick facts are given on design and operation of each breaker.

Special attachments are described, including the shunt trip, undervoltage release, auxiliary switches, and bell-alarm switches.

Advertisers' Index

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